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THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 9
AND
THE CALIFORNIA DEPARTMENT OF HEALTH SERVICES
AND
THE CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION
AND
THE UNITED STATES AIR FORCE

IN THE MATTER OF:)
)
)

The U.S. Department)
of the Air Force)
)

George Air Force Base)
)
_____)

Federal Facility
Agreement Under
CERCLA Section 120

Administrative
Docket Number:

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George AFB Federal Facility Agreement

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IN THE MATTER OF:)	Federal Facility
)	Agreement Under
The U.S. Department)	CERCLA Section 120
of the Air Force)	
)	Administrative
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)	

Based on the information available to the Parties on the effective date of this Federal Facility agreement (Agreement), and without trial or adjudication of any issues of fact or law, the Parties agree as follows:

1. PURPOSE

1.1 The general purposes of this Agreement are to:

(a) Ensure that the environmental impacts associated with past and present activities at the Site are thoroughly investigated and appropriate remedial action taken as necessary to protect the public health, welfare and the environment;

(b) Establish a procedural framework and schedule for developing, implementing and monitoring appropriate response actions at the Site in accordance with CERCLA, the NCP, Superfund guidance and policy, RCRA, RCRA guidance and policy, and applicable State law;

(c) Facilitate cooperation, exchange of information and participation of the Parties in such action; and

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(d) Ensure the adequate assessment of potential injury to natural resources, and the prompt notification of and cooperation with the Federal and State Natural Resources Trustees necessary to guarantee the implementation of response actions achieving appropriate cleanup levels.

1.2 Specifically, the purposes of this Agreement are to:

(a) Identify operable units (OUs) which are appropriate at the Site prior to the implementation of final remedial action(s) for the Site. OUs shall be identified, proposed to the Parties, and implemented as early as possible;

(b) Establish requirements for the performance of a Remedial Investigation ("RI") to determine fully the nature and extent of the threat to the public health or welfare or the environment caused by the release and threatened release of hazardous substances, pollutants, or contaminants at the Site and to establish requirements for the performance of a Feasibility Study ("FS") for the Site to identify, evaluate, and select alternatives for the appropriate remedial action(s) to prevent, mitigate, or abate the release or threatened release of hazardous substances, pollutants, or contaminants at the Site in accordance with CERCLA and applicable State law;

(c) Identify the nature, objective, and schedule of response actions to be taken at the Site. Response actions at the Site shall attain that degree of cleanup of hazardous substances, pollutants or contaminants mandated by CERCLA and applicable State law;

(d) Implement the selected remedial actions(s) in accordance with CERCLA and applicable State law and meet the requirements of CERCLA section 120(e)(2), 42 U.S.C. § 9620(e)(2), pertaining to interagency agreements;

(e) Assure compliance, through this Agreement, with RCRA and other federal and State hazardous waste laws and regulations for matters covered herein;

(f) Coordinate response actions at the Site with the mission and support activities at George AFB;

(g) Expedite the cleanup process to protect human health and the environment;

(h) Provide for State involvement in the initiation, development, selection and enforcement of remedial actions to be undertaken at George AFB, including the review of all applicable data as it becomes available and the development of studies, reports, and action plans; and to identify and integrate State ARARs into the remedial action process.

(i) Provide for operation and maintenance of any remedial action selected and implemented pursuant to this Agreement.

2. PARTIES

2.1 The Parties to this Agreement are EPA, the Air Force, the California Department of Health Services (DHS), and the California Regional Water Quality Control Board, Lahontan Region (RWQCB). The terms of the Agreement shall apply to and be binding upon all the Parties.

2.2 This Agreement shall be enforceable against all of the Parties to this Agreement. This Section shall not be construed as an agreement to indemnify any person. The Air Force shall notify its agents, members, employees, response action contractors for the Site, and all subsequent owners, operators, and lessees of the Site of the existence of this Agreement.

2.3 Each Party shall be responsible for ensuring that its contractors comply with the terms and conditions of this Agreement. Failure of a Party to provide proper direction to its contractors and any resultant noncompliance with this Agreement by a contractor shall not be considered a Force Majeure event or other good cause for extensions under Section 9 (Extensions), unless the Parties so agree or unless established by the Dispute Resolution Process contained in Section 12. The Air Force will notify EPA and DHS and the RWQCB of the identity and assigned tasks of each of its contractors performing work under this Agreement upon their selection.

3. JURISDICTION

3.1 Each Party is entering into this Agreement pursuant to the following authorities:

(a) The U.S. Environmental Protection Agency (EPA), enters into those portions of this Agreement that relate to the remedial investigation/feasibility study (RI/FS) pursuant to section 120(e)(1) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9620(e)(1), and the Resource Conservation and Recovery Act (RCRA) sections 6001, 3008(h) and 3004(u) and (v), and 7003, 42 U.S.C. § 6961, 6928(h), 6924(u) and (v), and 6973, the Clean Water Act, 33 U.S.C. § 1251 et seq., and Executive Order 12580;

(b) EPA enters into those portions of this Agreement that relate to remedial actions pursuant to CERCLA section 120(e)(2), 42 U.S.C. § 9620(e)(2), RCRA sections 6001, 3008(h) and 3004(u) & (v), and 7003, 42 U.S.C. § 6961, 6928(h), 6924(u) & (v), and 6973, the Clean Water Act, 33 U.S.C. § 1251 et seq., and Executive Order 12580;

(c) The Air Force enters into those portions of this Agreement that relate to the RI/FS pursuant to CERCLA section 120(e)(1), 42 U.S.C. § 9620(e)(1), RCRA sections 6001, 3008(h) and 3004(u) & (v), 42 U.S.C. § 6961, 6928(h), 6924(u) & (v), the Clean Water Act, 33 U.S.C. § 1251 et seq., Executive Order 12580, the National Environmental Policy Act, 42 U.S.C. § 4321, and the Defense Environmental Restoration Program (DERP), 10 U.S.C. § 2701 et. seq.;

(d) The Air Force enters into those portions of this Agreement that relate to remedial actions pursuant to CERCLA section 120(e)(2), 42 U.S.C. § 9620(e)(2), RCRA sections 6001, 3008(h), and 3004(u) & (v), 42 U.S.C. § 6961, 6928(h), 6924(u) & (v), the Clean Water Act, 33 U.S.C. § 1251 et seq., the National Environmental Policy Act, 42 U.S.C. § 4321 et seq., Executive Order 12580 and the DERP; and

(e) The California Department of Health Services and Regional Water Quality Control Board enter into this Agreement pursuant to CERCLA sections 120(f) and 121, 42 U.S.C. § 9620(f) and 9621, and California Health and Safety Code, section 102, and

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Division 20, chapters 6.5 and 6.8, and Division 7 of the California Water Code.

(f) The Department of Health Services (DHS) and the Regional Water Quality Control Board, Lahontan Region (RWQCB), will jointly designate a lead State agency for this Federal Facility within thirty (30) days after execution of this Agreement.

4. DEFINITIONS

4.1 Except as noted below or otherwise explicitly stated, the definitions provided in CERCLA, CERCLA case law, and the NCP shall control the meaning of terms used in this Agreement.

(a). "Agreement" shall refer to this document and shall include all Appendices to this document to the extent they are consistent with the original Agreement as executed or modified. All such Appendices shall be made an integral and enforceable part of this document. Copies of Appendices shall be available as part of the administrative record, as provided in Subsection 26.3.

(b). "Air Force" shall mean U.S. Air Force, its employees, members, agents, and authorized representatives. "Air Force" shall also include the Department of Defense (DOD), to the extent necessary to effectuate the terms of this Agreement, including, but not limited to, appropriations and Congressional reporting requirements.

(c). "ARARs" shall mean federal and State applicable or relevant and appropriate requirements, standards, criteria, or limitations, identified pursuant to section 121 of CERCLA. ARARs shall apply in the same manner and to the same extent that such are applied to any non-governmental entity, facility, unit, or site, as defined in CERCLA and the NCP. See CERCLA section 120(a)(1), 42 U.S.C. § 9620(a)(1).

(d). "CERCLA" shall mean the Comprehensive Environmental Response, Compensation and Liability Act, Public Law 96-510, 42 U.S.C. § 9601 et. seq., as amended by the Superfund Amendments and Reauthorization Act of 1986, Public Law 99-499, and any subsequent amendments.

(e). "Days" shall mean calendar days, unless business days are specified. Any submittal that under the terms of this

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Agreement would be due on Saturday, Sunday, or holiday shall be due on the following business day.

(f). "DHS" shall mean the Department of Health Services, its successors and assigns, and its duly authorized representatives.

(g). "EPA" shall mean the United States Environmental Protection Agency, its employees and authorized representatives.

(h). "Facility" shall have the same definition as in CERCLA section 101(9), 42 U.S.C. § 9601(9).

(i). "Federal Facility" shall include the major installation George Air Force Base and any real property contiguous thereto and subject to the jurisdiction of the Commander, 831 Combat Support Group.

(j). "Feasibility Study" or "FS" means a study conducted pursuant to CERCLA and the NCP which fully develops, screens and evaluates in detail remedial action alternatives to prevent, mitigate, or abate the migration or the release of hazardous substances, pollutants, or contaminants at and from the Site. The Air Force shall conduct and prepare the FS in a manner to support the intent and objectives of Section 17 (Statutory Compliance/RCRA-CERCLA Integration).

(k). "Meeting," in regard to Remedial Project Managers, shall mean an in-person discussion at a single location or a conference telephone call of all Remedial Project Managers. A conference call will suffice for an in-person meeting at the concurrence of the Remedial Project Managers.

(l). "National Contingency Plan" or "NCP" shall refer to the regulations contained in 40 CFR 300.1 et seq.

(m). "Natural Resources Trustee(s)" or "Federal or State Natural Resources Trustees" shall have the same meaning and authority as provided in CERCLA and the NCP.

(n). "Natural Resources Trustee(s) Notification and Coordination" shall have the same meaning as provided in CERCLA and the NCP.

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(p). "Operable Unit" or "OU" shall have the same meaning as provided in the NCP.

(q). "Operation and maintenance" shall mean activities required to maintain the effectiveness of response actions.

(r). "Person" shall have the same meaning as provided in CERCLA Section 101(21), 42 U.S.C. § 9601(21), California Health and Safety Code sections 25118, Porter-Cologne Water Quality Control Act section 13050(c).

(s). "RCRA" or "RCRA/HSWA" shall mean the Resource Conservation and Recovery Act of 1976, Public Law 94-580, 42 U.S.C. § 6901 et. seq., as amended by the Hazardous and Solid Waste Amendments of 1984, Public Law 98-616, and any subsequent amendments.

(t). "Remedial Design" or "RD" shall have the same meaning as provided in the NCP.

(u). "Remedial Investigation" or "RI" means that investigation conducted pursuant to CERCLA and the NCP, as supplemented by the substantive provisions of the EPA RCRA Facilities Assessment guidance. The RI serves as a mechanism for collecting data for Site and waste characterization and conducting treatability studies as necessary to evaluate performance and cost of the treatment technologies. The data gathered during the RI will also be used to conduct a baseline risk assessment, perform a feasibility study, and support design of a selected remedy. The Air Force shall conduct and prepare the RI in a manner to support the intent and objectives of Section 17 (Statutory Compliance/RCRA-CERCLA Integration).

(v). "Remedial Project Manager" or "RPM" in this Agreement shall have the meaning and authority provided in Section 18, below.

(w). "Remedy" or "Remedial Action" or "RA" shall have the same meaning as provided in section 101(24) of CERCLA, 42 U.S.C. § 9601(23), and the NCP, and may consist of Operable Units.

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(x). "Remove" or "Removal" shall have the same meaning as provided in section 101(23) of CERCLA, 42 U.S.C. § 9601(23), and the NCP.

(y). "RWQCB" shall mean the Regional Water Quality Control Board, Lahontan Region, its successors and assigns, and its duly authorized representatives.

(z). "Site" shall include the Federal Facility of George Air Force Base as defined above, the facility as defined above, any area off the facility to or under which a release of hazardous substances has migrated, or threatens to migrate, from a source on or at George AFB. For the purposes of obtaining permits, the terms "on-site" and "off-site" shall have the same meaning as provided in the NCP.

(aa). "State" shall mean the State of California and its employees and authorized representatives, and shall refer to both DHS and RWQCB unless otherwise specified.

5. DETERMINATIONS

5.1 This Agreement is based upon the placement of George Air Force Base ("George AFB"), San Bernardino County, California, on the National Priorities List by the Environmental Protection Agency on February 21, 1990, 55 Federal Register at page 6154.

5.2 George AFB is a facility under the jurisdiction, custody, or control of the Department of Defense within the meaning of Executive Order 12580, 52 Federal Register 2923, 29 January 1987. The Department of the Air Force is authorized to act in behalf of the Secretary of Defense for all functions delegated by the President through E.O. 12580 which are relevant to this Agreement.

5.3 George AFB is a Federal Facility under the jurisdiction of the Secretary of Defense within the meaning of CERCLA section 120, 42 U.S.C. § 9620, and Superfund Amendments and Reauthorization Act of 1986 (SARA) section 211, 10 U.S.C. § 2701 et seq., and subject to the Defense Environmental Restoration Program (DERP).

5.4 The Air Force is the authorized delegate of the President under E.O. 12580 for receipt of notification by the State of its ARARs as required by CERCLA section 121(d)(2)(A)(ii), 42 U.S.C. § 9621(d)(2)(A)(ii).

as required by CERCLA section 121(d)(2)(A)(ii), 42 U.S.C. § 9621(d)(2)(A)(ii).

5.5 The authority of the Air Force to exercise the delegated removal authority of the President pursuant to CERCLA section 104, 42 U.S.C. § 9604 is not altered by this Agreement.

5.6 The actions to be taken pursuant to this Agreement are reasonable and necessary to protect the public health, welfare, or the environment.

5.7 There are areas within the boundaries of the Federal Facility where hazardous substances have been deposited, stored, placed, or otherwise come to be located in accordance with 42 U.S.C. § 9601(9) and (14).

5.8 There have been releases of hazardous substances, pollutants or contaminants at or from the Federal Facility into the environment within the meaning of 42 U.S.C. § 9601(22), 9604, 9606, and 9607.

5.9 With respect to these releases, the Air Force is an owner, operator, and/or generator subject to the provisions of 42 U.S.C. § 9607 and within the meaning of California Health and Safety Code section 25323.5(a), and is a person within the meaning of California Health and Safety Code section 25118 and California Water Code section 13050(c).

5.10 Included as an Attachment to this Agreement is a map showing source(s) of suspected contamination and the areal extent of known contamination, based on information available at the time of the signing of this Agreement.

5.11 In accordance with Section 300.600(b)(3) of the National Contingency Plan, and Section 107(f) of CERCLA (42 U.S.C. § 9607(f)), the Secretary of Defense is the trustee for natural resources located on, over, or under the Federal Facility, to the extent such natural resources are not specifically entrusted to the Secretary of Commerce or the Secretary of the Interior.

6. WORK TO BE PERFORMED

6.1 The Parties agree to perform the tasks, obligations and responsibilities described in this Section in accordance with CERCLA and CERCLA guidance and policy; the NCP; pertinent provisions of RCRA and RCRA guidance and policy; Executive Order 12580; applicable State laws and regulations; and all terms and conditions of this Agreement including documents prepared and incorporated in accordance with Section 7 (Consultation).

6.2 The Air Force agrees to undertake, seek adequate funding for, fully implement and report on the following tasks, with participation of the Parties as set forth in this Agreement:

- (a) Remedial Investigations of the Site;
- (b) Federal and State Natural Resource Trustee Notification and Coordination for the Site;
- (c) Feasibility Studies for the Site;
- (d) All response actions, including Operable Units, for the Site;
- (e) Operation and maintenance of response actions at the Site.

6.3 The Parties agree to:

- (a) Make their best efforts to expedite the initiation of response actions for the Site, particularly for Operable Units;
- (b) Carry out all activities under this Agreement so as to protect the public health, welfare and the environment.

6.4 Upon request, EPA and the State agree to provide any Party with guidance or reasonable assistance in obtaining guidance relevant to the implementation of this Agreement.

7. CONSULTATION: Review and Comment Process for Draft and Final Documents

7.1 Applicability: The provisions of this Section establish the procedures that shall be used by the Parties to provide each other with appropriate technical support, notice, review, comment, and response to comments regarding RI/FS and RD/RA documents, specified herein as either primary or secondary documents. In accordance with CERCLA section 120, 42 U.S.C. § 9620, and 10 U.S.C. § 2705, the Air Force will normally be responsible for issuing primary and secondary documents to EPA, and the State. As of the effective date of this Agreement, all draft, draft final and final deliverable documents identified herein shall be prepared, distributed and subject to dispute in accordance with subsections 7.2 through 7.10 below. The designation of a document as "draft" or "final" is solely for purposes of consultation with EPA and the State in accordance with this Section. Such designation does not affect the obligation of the Parties to issue documents, which may be referred to herein as "final", to the public for review and comment as appropriate and as required by law.

7.2 General Process for RI/FS and RD/RA documents:

(a) Primary documents include those reports that are major, discrete, portions of RI/FS and/or RD/RA activities. Primary documents are initially issued by the Air Force in draft subject to review and comment by EPA and the State. Following receipt of comments on a particular draft primary document, the Air Force will respond to the comments received and issue a draft final primary document subject to dispute resolution. The draft final primary document will become the final primary document either thirty (30) days after the issuance of a draft final document if dispute resolution is not invoked or as modified by decision of the dispute resolution process.

(b) Secondary documents include those reports that are discrete portions of the primary documents and are typically input or feeder documents. Secondary documents are issued by the Air Force in draft subject to review and comment by EPA and the State. Although the Air Force will respond to comments received, the draft secondary documents may be finalized in the context of the corresponding primary documents. A secondary document may be

disputed at the time the corresponding draft final primary document is issued.

7.3 Primary Documents:

(a) The Air Force shall complete and transmit drafts of the following primary documents for each remedial action to EPA and the State, for review and comment in accordance with the provisions of this Section.

(1) RI/FS Workplans, including Sampling and Analysis Plans

(2) Quality Assurance Project Plans (QAPPs)

(3) Community Relations Plans (May be amended as appropriate to address Operable Units. Any such amendments shall not be subject to the threshold requirements of subsection 7.10. Any disagreement regarding amendment of the CRP shall be resolved pursuant to Section 12 (Dispute Resolution).)

(4) RI Reports (incorporating Risk Assessments)

(5) FS Reports

(6) Proposed Plans

(7) Records of Decision (RODs)

(8) Remedial Designs (RDs)

(9) Remedial Action Work Plans (to include operation and maintenance plans, and schedules for RA).

(b) Only draft final primary documents shall be subject to dispute resolution. The Air Force shall complete and transmit draft primary documents in accordance with the timetable and deadlines established in Section 8 (Deadlines) of this Agreement.

(c) Primary documents may include target dates for subtasks as provided in subsections 7.4(b) and 18.3. The purpose of target dates is to assist the Air Force in meeting deadlines, but target dates do not become enforceable by their inclusion in the primary

documents and are not subject to Section 8 (Deadlines), Section 9 (Extensions) or Section 13 (Enforceability).

7.4 Secondary Documents:

(a) The Air Force shall complete and transmit drafts of the following secondary documents for each remedial action to EPA and the State for review and comment.

- (1) Site Characterization Summaries (part of RI)
- (2) Sampling and Data Results
- (3) Treatability Studies (only if generated)
- (4) Initial Screenings of Alternatives
- (5) Risk Assessments
- (6) Well closure methods and procedures
- (7) Detailed Analyses of Alternatives
- (8) Post-Screening Investigation Work Plans

(b) Although EPA and the State may comment on the drafts for the secondary documents listed above, such documents shall not be subject to dispute resolution except as provided by Subsection 7.2 hereof. Target dates for the completion and transmission of draft secondary documents may be established by the Remedial Project Managers. The Remedial Project Managers also may agree upon additional secondary documents that are within the scope of the listed primary documents.

7.5. Meetings of the Remedial Project Managers. (See also Subsection 18.3) The Remedial Project Managers shall meet in person approximately every ninety (90) days, except as otherwise agreed by the Parties, to review and discuss the progress of work being performed at the Site, including progress on the primary and secondary documents. However, progress meetings may be held more frequently as needed upon request by any Remedial Project Manager. Prior to preparing any draft document specified in subsections 7.3 and 7.4 above, the Remedial Project Managers shall

meet in an effort to reach a common understanding with respect to the contents of the draft document.

7.6 Identification and Determination of Potential ARARs:

(a) For those primary documents or secondary documents for which ARAR determinations are appropriate, prior to the issuance of a draft document, the Remedial Project Managers shall meet to identify and propose all potential ARARs pertinent to the document being addressed, including any permitting requirements which may be a source of ARARs. At that time, the State shall identify potential State ARARs as required by CERCLA section 121(d)(2)(A)(ii), 42 U.S.C. § 9621(d)(2)(A)(ii), which are pertinent to those activities for which it is responsible and the document being addressed. Draft ARAR determinations shall be prepared by the Air Force in accordance with CERCLA section 121(d)(2), 42 U.S.C. § 9621(d)(2), the NCP and pertinent guidance issued by EPA.

(b) The State lead agency will contact other State and local governmental agencies which are a source of potential ARARs. The proposed ARARs obtained from the identified agencies will be submitted to the Air Force, along with a list of those agencies who failed to respond to the state lead agency's solicitation of proposed ARARs. The Air Force will contact those agencies who failed to respond and again solicit these inputs.

(c) In identifying potential ARARs, the Parties recognize that actual ARARs can be identified only on a site-specific basis and that ARARs depend on the specific hazardous substances, pollutants and contaminants at a site, the particular actions associated with a proposed remedy and the characteristics of a site. The Parties recognize that ARAR identification is necessarily an iterative process and that potential ARARs must be identified and discussed among the Parties as early as possible, and must be reexamined throughout the RI/FS process until a ROD is issued.

7.7 Review and Comment on Draft Documents:

a) The Air Force shall complete and transmit each draft primary document to EPA, DHS and RWQCB on or before the corresponding deadline established for the issuance of the document. The Air Force shall complete and transmit the draft secondary

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documents in accordance with the target dates established for the issuance of such documents.

(b) Unless the Parties mutually agree to another time period, all draft documents shall be subject to a sixty (60) day period for review and comment. Review of any document by the EPA and DHS and RWQCB may concern all aspects of it (including completeness) and should include, but is not limited to, technical evaluation of any aspect to the document, and consistency with CERCLA, the NCP, applicable California law, and any pertinent guidance or policy issued by the EPA or the State. At the request of any Remedial Project Manager, and to expedite the review process, the Air Force shall make an oral presentation of the document to the Parties at the next scheduled meeting of the Remedial Project Managers following transmittal of the draft document or within fourteen (14) days following the request, whichever is sooner. Comments by the EPA and the State shall be provided with adequate specificity so that the Air Force may respond to the comment and, if appropriate, make changes to the draft document. Comments shall refer to any pertinent sources of authority or references upon which the comments are based and, upon request of the Air Force, the EPA or the State, as appropriate, shall provide a copy of the cited authority or reference. EPA or the State may extend the sixty (60) day comment period for an additional thirty (30) days by written notice to the Air Force prior to the end of the sixty (60) day period. On or before the close of the comment period, EPA, DHS and RWQCB shall transmit their written comments to the Air Force. In appropriate circumstances, this time period may be further extended in accordance with Section 9 (Extensions).

(c) Representatives of the Air Force shall make themselves readily available to EPA and the State during the comment period for purposes of informally responding to questions and comments on draft documents. Oral comments made during such discussions need not be the subject of a written response by the Air Force on the close of the comment period.

(d) In commenting on a draft document which contains a proposed ARAR determination, EPA or the State shall include a reasoned statement of whether it objects to any portion of the proposed ARAR determination. To the extent that EPA or the State does object, it shall explain the basis for its objection in detail and

shall identify any ARARs which it believes were not properly addressed in the proposed ARAR determination.

(e) Following the close of the comment period for a draft document, the Air Force shall give full consideration to all written comments. Within fifteen (15) days following the close of the comment period on a draft secondary document or draft primary document the Parties shall hold a meeting to discuss all comments received. On a draft secondary document the Air Force shall, within sixty (60) days of the close of the comment period, transmit to the EPA and the State its written response to the comments received. On a draft primary document the Air Force shall, within sixty (60) days of the close of the comment period, transmit to EPA and the State a draft final primary document, which shall include the Air Force's response to all written comments received within the comment period. While the resulting draft final document shall be the responsibility of the Air Force, it shall be the product of consensus to the maximum extent possible.

(f) The Air Force may extend the sixty (60) day period for either responding to comments on a draft document or for issuing the draft final primary document for an additional thirty (30) days by providing written notice to EPA and the State. In appropriate circumstances, this time period may be further extended in accordance with Section 9 (Extensions).

7.8 Availability of Dispute Resolution for Draft Final Primary Documents:

(a) Dispute resolution shall be available to the Parties for draft final primary documents as set forth in Section 12 (Dispute Resolution).

(b) When dispute resolution is invoked on a draft final primary document, work may be stopped in accordance with the procedures set forth in Subsection 12.9 regarding dispute resolution.

7.9 Finalization of Documents: The draft final primary document shall serve as the final primary document if no party invokes dispute resolution regarding the document or, if invoked, at completion of the dispute resolution process should the Air Force's position be sustained. If the Air Force's determination is not sustained in the dispute resolution process, the Air Force shall

prepare, within not more than sixty (60) days, a revision of the draft final document which conforms to the results of dispute resolution. In appropriate circumstances, the time period for this revision period may be extended in accordance with Section 9 (Extensions).

7.10 Subsequent Modification of Final Documents: Following finalization of any primary document, other than the Community Relations Plan, pursuant to Subsection 7.9 above, any Party may seek to modify the document including seeking additional field work, pilot studies, computer modeling or other supporting technical work, only as provided in subparagraphs (a) and (b) below. (These restrictions do not apply to the Community Relations Plan.)

(a) Any Party may seek to modify a document after finalization if it determines, based on new information (i.e., information that becomes available, or conditions that become known, after the document was finalized) that the requested modification is necessary. Any party may seek such a modification by submitting a concise written request to the Remedial Project Managers of the other Parties. The request shall specify the nature of the requested modification and how the request is based on new information.

(b) In the event that a consensus is not reached by the Remedial Project Managers on the need for a modification, any Party may invoke dispute resolution to determine if such modification shall be conducted. Modification of a document shall be required only upon a showing that:

(1) The requested modification is based on significant new information; and

(2) The requested modification could be of significant assistance in evaluating impacts on the public health or the environment, in evaluating the selection of remedial alternatives, or in protecting human health and the environment.

(c) Nothing in this Section shall alter EPA's or the State's ability to request the performance of additional work which was not contemplated by this Agreement. The Air Force's obligation to perform such work under this Agreement must be established by either a modification of a document or by amendments to this Agreement.

8. DEADLINES

8.1. All deadlines agreed upon before the effective date of this Agreement shall be made an Appendix to this Agreement. To the extent that deadlines have already been mutually agreed upon by the Parties prior to the effective date of this Agreement, they will satisfy the requirements of this Section and remain in effect, shall be published in accordance with Subsection 8.2, and shall be incorporated into the appropriate work plans.

8.2. Within forty-five (45) days after the effective date of this Agreement, the Air Force shall propose, and announce and make available for public comment in the same manner as Section 36 specifies for this Agreement, proposed deadlines for completion of the following draft primary documents for each remedial action identified as of the date of EPA execution of this Agreement:

- (a) RI/FS Workplans, including Sampling and Analysis Plans
- (b) Quality Assurance Project Plans (QAPPs)
- (c) Community Relations Plan
- (d) RI Reports
- (e) FS Reports
- (f) Proposed Plans
- (g) Records of Decision

Within sixty (60) days after EPA executes the Agreement, or the end of the public comment period on the Agreement, whichever is later, EPA and the State shall review and provide comments to the Air Force regarding the proposed deadlines. Within fifteen (15) days following receipt of the comments the Air Force shall, as appropriate, make revisions and reissue the proposal. The Parties shall meet as necessary to discuss and finalize the proposed deadlines. All agreed-

upon deadlines shall be incorporated into the appropriate work plans. If the Parties fail to agree within thirty (30) days on the proposed deadlines, the matter shall immediately be submitted for dispute resolution pursuant to Section 12 (Dispute Resolution). The final deadlines established pursuant to this Subsection shall be published by EPA, in conjunction with the State, and shall become an Appendix to this Agreement.

8.3 Within twenty-one (21) days of issuance of the Record of Decision for any operable unit or for the final remedy, the Air Force shall propose deadlines for completion of the following draft primary documents:

(a) Remedial Designs

(b) Remedial Action Work Plans (to include operation and maintenance plans, and schedules for RA)

These deadlines shall be proposed, finalized and published using the same procedures set forth in Subsection 8.2 above.

8.4 For any operable units not identified as of the effective date of this Agreement, the Air Force shall propose deadlines for all documents listed in Subsection 7.3(a)(1) through (7) (with the exception of the Community Relations Plan) within twenty-one (21) days of agreement on the proposed operable unit by all Parties. These deadlines shall be proposed, finalized and published using the same procedures set forth in Subsection 8.2, above.

8.5 The deadlines set forth in this Section, or to be established as set forth in this Section, may be extended pursuant to Section 9 (Extensions). The Parties recognize that one possible basis for extension of the deadlines for completion of the Remedial Investigation and Feasibility Study Reports is the identification of significant new Site conditions during the performance of the remedial investigation.

9. EXTENSIONS

9.1 Timetables, deadlines and schedules shall be extended upon receipt of a timely request for extension and when good cause exists for the requested extension. Any request for extension by a

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Party shall be submitted to the other Parties in writing and shall specify:

- (a) The timetable, deadline or schedule that is sought to be extended;
- (b) The length of the extension sought;
- (c) The good cause(s) for the extension; and
- (d) The extent to which any related timetable and deadline or schedule would be affected if the extension were granted.

9.2 Good cause exists for an extension when sought in regard to:

- (a) An event of Force Majeure;
- (b) A delay caused by another Party's failure to meet any requirement of this Agreement;
- (c) A delay caused by the good faith invocation of dispute resolution or the initiation of judicial action;
- (d) A delay caused, or which is likely to be caused, by the grant of an extension in regard to another timetable and deadline or schedule;
- (e) A delay caused by public comment periods or hearings required under State law in connection with the State's performance of this Agreement;
- (f) Any work stoppage within the scope of Section 11 (Emergencies and Removals); or
- (g) Any other event or series of events mutually agreed to by the Parties as constituting good cause.

9.3 Absent agreement of the Parties with respect to the existence of good cause, a Party may seek and obtain a determination through the dispute resolution process that good cause exists.

9.4 Within seven days of receipt of a request for an extension of a timetable, deadline or schedule, each receiving Party shall advise the requesting Party in writing of the receiving Party's position on the request. Any failure by a receiving Party to respond within the 7-day period shall be deemed to constitute concurrence with the request for extension. If a receiving Party does not concur in the requested extension, it shall include in its statement of nonconcurrence an explanation of the basis for its position.

9.5 If there is consensus among the Parties that the requested extension is warranted, the Air Force shall extend the affected timetable and deadline or schedule accordingly. If there is no consensus among the Parties as to whether all or part of the requested extension is warranted, the timetable and deadline or schedule shall not be extended except in accordance with a determination resulting from the dispute resolution process.

9.6 Within seven days of receipt of a statement of nonconcurrence with the requested extension, the requesting Party may invoke dispute resolution.

9.7 A timely and good faith request by the Air Force for an extension shall toll any assessment of stipulated penalties or application for judicial enforcement of the affected timetable and deadline or schedule until a decision is reached on whether the requested extension will be approved. If dispute resolution is invoked and the requested extension is denied, stipulated penalties may be assessed and may accrue from the date of the original timetable, deadline or schedule. Following the grant of an extension, an assessment of stipulated penalties or an application for judicial enforcement may be sought only to compel compliance with the timetable and deadline or schedule as most recently extended.

10. FORCE MAJEURE

10.1 A Force Majeure shall mean any event arising from causes beyond the control of a Party that causes a delay in or prevents the performance of any obligation under this Agreement, including, but not limited to, acts of God; fire; war; insurrection; civil disturbance; explosion; unanticipated breakage or accident to machinery, equipment or lines of pipe despite reasonably diligent maintenance; adverse weather conditions that could not be reasonably anticipated; unusual delay in transportation; restraint by

C court order or order of public authority; inability to obtain, at reasonable cost and after exercise of reasonable diligence, any necessary authorizations, approvals, permits, or licenses due to action or inaction of any governmental agency or authority other than the Air Force; delays caused by compliance with applicable statutes or regulations governing contracting, procurement or acquisition procedures, despite the exercise of reasonable diligence; and insufficient availability of appropriated funds which have been diligently sought. In order for Force Majeure based on insufficient funding to apply to the Air Force, the Air Force shall have made timely request for such funds as part of the budgetary process as set forth in Section 15 (Funding). A Force Majeure shall also include any strike or other labor dispute, whether or not within the control of the Parties affected thereby. Force Majeure shall not include increased costs or expenses of Response Actions, whether or not anticipated at the time such Response Actions were initiated.

11. EMERGENCIES AND REMOVALS

11.1 Discovery and Notification.

C If any Party discovers or becomes aware of an emergency or other situation that may present an endangerment to public health, welfare or the environment at or near the Site, which is related to or may affect the work performed under this Agreement, that Party shall immediately orally notify all other Parties. If the emergency arises from activities conducted pursuant to this Agreement, the Air Force shall then take immediate action to notify the appropriate State and local agencies and affected members of the public.

11.2 Work Stoppage

C In the event any Party determines that activities conducted pursuant to this Agreement will cause or otherwise be threatened by a situation described in Subsection 11.1, the Party may propose the termination of such activities. If the Parties mutually agree, the activities shall be stopped for such period of time as required to abate the danger. In the absence of mutual agreement, the activities shall be stopped in accordance with the proposal, and the matter shall be immediately referred to the EPA Hazardous Waste Management Division Director for a work stoppage determination in accordance with Section 12.9.

11.3 Removal Actions

(a) The provisions of this Section shall apply to all removal actions as defined in CERCLA section 101(23), 42 U.S.C. § 9601(23) and Health and Safety Code section 25323, including all modifications to, or extensions of, the ongoing removal actions, and all new removal actions proposed or commenced following the effective date of this Agreement.

(b) Any removal actions conducted at the Site shall be conducted in a manner consistent with this Agreement, CERCLA, the NCP and Executive Order 12580.

(c) Nothing in this Agreement shall alter the Air Force's authority with respect to removal actions conducted pursuant to section 104 of CERCLA, 42 U.S.C. § 9604.

(d) Nothing in this Agreement shall alter any authority the State or EPA may have with respect to removal actions conducted at the Site.

(e) All reviews conducted by EPA and the State pursuant to 10 U.S.C. § 2705(b)(2) will be expedited so as not to unduly jeopardize fiscal resources of the Air Force for funding the removal actions.

(f) If a Party determines that there may be an endangerment to the public health or welfare or the environment because of an actual or threatened release of a hazardous substance, pollutant or contaminant at or from the Site, including but not limited to discovery of contamination of a drinking water well at concentrations that exceed any State or federal drinking water action level or standards, the Party may request that the Air Force take such response actions as may be necessary to abate such danger or threat and to protect the public health or welfare or the environment. Such actions might include provision of alternative drinking water supplies or other response actions listed in CERCLA section 101(23) or (24), or such other relief as the public interest may require.

11.4 Notice and Opportunity to Comment.

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(a) The Air Force shall provide the other Parties with timely notice and opportunity to review and comment upon any proposed removal action for the Site, in accordance with 10 U.S.C. § 2705(a) and (b). The Air Force agrees to provide the information described below pursuant to such obligation.

(b) For emergency response actions, the Air Force shall provide EPA and the State with notice in accordance with Subsection 11.1. Such oral notification shall, except in the case of extreme emergencies, include adequate information concerning the Site background, threat to the public health and welfare or the environment (including the need for response), proposed actions and costs (including a comparison of possible alternatives, means of transportation of any hazardous substances off-site, and proposed manner of disposal), expected change in the situation should no action be taken or should action be delayed (including associated environmental impacts), any important policy issues, and the Air Force On-Scene Coordinator recommendations. Within forty-five (45) days of completion of the emergency action, the Air Force will furnish EPA and the State with an Action Memorandum addressing the information provided in the oral notification, and any other information required pursuant to CERCLA and the NCP, and in accordance with pertinent EPA guidance, for such actions.

(c) For other removal actions, the Air Force will provide EPA and the State with any information required by CERCLA, the NCP, and in accordance with pertinent EPA guidance, such as the Action Memorandum, the Engineering Evaluation/Cost Analysis (in the case of non-time-critical removals) and, to the extent it is not otherwise included, all information required to be provided in accordance with paragraph (b) of this Subsection.

(d) All activities related to ongoing removal actions shall be reported by the Air Force in the progress reports as described in Section 19 (Remedial Project Managers).

11.5 Any dispute among the Parties as to whether a proposed nonemergency response action is (a) properly considered a removal action, as defined by 42 U.S.C. § 9601(23), or (b) consistent with the final remedial action, shall be resolved pursuant to Section 12 (Dispute Resolution). Such dispute may be brought directly to the DRC or the SEC at any Party's request. For purposes of this Subsection 11.5, the term "nonemergency response action" includes,

but is not limited to, any removal action for which consultation, as required by 10 U.S.C. § 2705, is practical, or any removal action which has extended beyond one-hundred and twenty (120) days from the initiation of the on-site removal activities.

11.6 The Parties shall first seek to resolve any dispute as to whether the Air Force will take a removal action requested by any Party under Subsection 11.3(f) through the dispute resolution process contained in Section 12 (Dispute Resolution), but that process shall be modified for disputes on this specific subject matter in accordance with Subsection 12.12. EPA and the State reserve any and all rights each may have with regard to whether the Air Force will take a removal action requested by any Party pursuant to Subsection 11.3(f) once the dispute resolution process specified in this subsection is exhausted, and notwithstanding Subsection 31 (Covenant Not to Sue and Reservation of Rights).

12. DISPUTE RESOLUTION

12.1 Except as specifically set forth elsewhere in this Agreement, if a dispute arises under this Agreement, the procedures of this Section shall apply. This dispute resolution procedure may be invoked by EPA, by the Air Force, or collectively by the Parties representing the State of California as a unit. All Parties to this Agreement shall make reasonable efforts to informally resolve disputes at the Remedial Project Manager or immediate supervisor level. If resolution cannot be achieved informally, the procedures of this Section shall be implemented to resolve a dispute.

12.2 Within thirty (30) days after: (a) the receipt of a draft final primary document pursuant to Section 7 (Consultation), or (b) any action which leads to or generates a dispute, the disputing Party shall submit to the Dispute Resolution Committee (DRC) a written statement of dispute setting forth the nature of the dispute, the work affected by the dispute, the disputing Party's position with respect to the dispute and the technical, legal or factual information the disputing Party is relying upon to support its position.

12.3 Prior to any Party's issuance of a written statement of a dispute, the disputing Party shall engage the other Party in informal dispute resolution among the Remedial Project Manager and/or their immediate supervisors. During this informal dispute resolution

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period the Parties shall meet as many times as are necessary to discuss and attempt resolution of the dispute.

12.4 The DRC will serve as a forum for resolution of dispute for which agreement has not been reached through informal dispute resolution. The Parties shall each designate one individual and an alternate to serve on the DRC. The individuals designated to serve on the DRC shall be employed at the policy level Senior Executive Service (SES) or equivalent or be delegated the authority to participate on the DRC for the purposes of dispute resolution under this Agreement. The EPA representative on the DRC is the Deputy Director for Superfund, Hazardous Waste Management Division, EPA Region 9. The Air Force's designated member is the Director of Environmental Management, Tactical Air Command. The DHS representative is the Chief of the Site Mitigation Branch, Region 4. The RWQCB representative is the Assistant Executive Officer for the Lahontan Region. Written notice of any delegation of authority from a Party's designated representative on the DRC shall be provided to all other Parties pursuant to the procedures of Section 21 (Notification).

12.5 Following elevation of a dispute to the DRC, the DRC shall have twenty-one (21) days to unanimously resolve the dispute and issue a written decision. If the DRC is unable to unanimously resolve the dispute within this twenty-one (21) day period, the written statement of dispute shall be forwarded to the Senior Executive Committee (SEC) for resolution within seven (7) days after the close of the twenty-one (21) day resolution period.

12.6 The SEC will serve as the forum for resolution of disputes for which agreement has not been reached by the DRC. The EPA representative on the SEC is the Regional Administrator of EPA Region 9. The Air Force's representative on the SEC is the Deputy Chief of Staff for Engineering and Services, Headquarters Tactical Air Command. The DHS representative on the SEC is the DHS Regional Administrator, Region 4. The RWQCB representative on the SEC is the Executive Officer for the Lahontan Region. The SEC members shall, as appropriate, confer, meet and exert their best efforts to resolve the dispute and issue a written decision. If unanimous resolution of the dispute is not reached within twenty-one (21) days, EPA's Regional Administrator shall issue a written position on the dispute. The Air Force or the State may, within fourteen (14) days of the Regional Administrator's issuance of EPA's

position, issue a written notice elevating the dispute to the Administrator of EPA for resolution in accordance with all applicable laws and procedures. In the event the Air Force or the State elects not to elevate the dispute to the Administrator within the designated fourteen (14) day escalation period, the Air Force and the State shall be deemed to have agreed with the Regional Administrator's written position with respect to the dispute.

12.7 Upon escalation of a dispute to the Administrator of EPA pursuant to Subsection 12.6 above, the Administrator will review and resolve the dispute within twenty-one (21) days. Upon request, and prior to resolving the dispute, the EPA Administrator shall meet and confer with the Air Force's Secretariat Representative, DHS Chief Deputy Director, and RWQCB's Executive Officer to discuss the issue(s) under dispute. Upon resolution, the Administrator shall provide the Air Force and the State with a written final decision setting forth resolution of the dispute. The duties of the Administrator set forth in this Section shall not be delegated.

12.8 The pendency of any dispute under this Section shall not affect any Party's responsibility for timely performance of the work required by this Agreement, except that the time period for completion of work affected by such dispute shall be extended for a period of time usually not to exceed the actual time taken to resolve any good faith dispute in accordance with the procedures specified herein. All elements of the work required by this Agreement which are not affected by the dispute shall continue and be completed in accordance with the applicable timetable and deadline or schedule.

12.9 When dispute resolution is in progress, work affected by the dispute will immediately be discontinued if the Hazardous Waste Management Division Director for EPA Region 9 requests, in writing, that work related to the dispute be stopped because, in EPA's opinion, such work is inadequate or defective, and such inadequacy or defect is likely to yield an adverse effect on human health or the environment, or is likely to have a substantial adverse effect on the remedy selection or implementation process. The State may request the EPA Hazardous Waste Management Division Director to order work stopped for the reasons set out above. To the extent possible, the Party seeking a work stoppage shall consult with the other Parties prior to initiating a work stoppage request. After work stoppage, if a Party believes that the work stoppage is inappropriate or may have potential significant adverse impacts, the Party may

meet with the other Parties to discuss the work stoppage. Following this meeting, and further considerations of this issue the EPA Hazardous Waste Management Division Director will issue, in writing, a final decision with respect to the work stoppage. The final written decision of the EPA Hazardous Waste Management Division Director may immediately be subject to formal dispute resolution. Such dispute may be brought directly to either the DRC or the SEC, at the discretion of the Party requesting dispute resolution.

12.10 Within twenty-one (21) days of resolution of a dispute pursuant to the procedures specified in this Section, the Air Force shall incorporate the resolution and final determination into the appropriate plan, schedule or procedures and proceed to implement this Agreement according to the amended plan, schedule or procedures.

12.11 Except as provided in Subsection 31.2, resolution of a dispute pursuant to this Section of the Agreement constitutes a final resolution of any dispute arising under this Agreement. All Parties shall abide by all terms and conditions of any final resolution of dispute obtained pursuant to this Section of this Agreement.

12.12 The following modified dispute resolution procedure shall only apply to disputes arising under Subsection 11.6, concerning a decision by the Air Force to not undertake a removal action as requested under Subsection 11.3(f). This provision shall apply to such disputes in lieu of the procedures specified in Subsections 12.5, 12.6 and 12.7.

(a) For purposes of this modified dispute resolution procedure, the EPA and State representatives on the Dispute Resolution Committee (DRC) and Senior Executive Committee (SEC) shall remain the same as in Subsections 12.4 and 12.6, while the Air Force member of the DRC shall be the Director of Environmental Management, Tactical Air Command, and the Air Force member of the SEC shall be Deputy Chief of Staff for Engineering and Services, Tactical Air Command.

(b) After submission of a Subsection 11.6 matter to dispute, as described in Subsection 12.2, the DRC shall handle the dispute under the procedure described in Subsection 12.5, except that the DRC shall have ten (10) days rather than twenty one (21) days to unanimously resolve the dispute, and shall forward an

unresolved dispute to the SEC within four (4) days rather than seven (7) days.

(c) If agreement is not reached by the DRC, the SEC members shall, as appropriate, confer, meet and exert their best efforts to resolve the dispute and issue a written decision. If unanimous resolution of the dispute is not reached in seven (7) days, the Air Force SEC member shall issue a written position on the dispute. EPA or the State may, within four (4) days of the issuance of the Air Force SEC member's position, issue a written notice elevating the dispute to the Deputy Assistant Secretary of the Air Force for Environment, Safety, and Occupational Health (currently designated SAF/MIQ), for resolution in accordance with all applicable laws and procedures. In the event EPA or the State elects not to elevate the dispute to SAF/MIQ within the designated four (4) day elevation period, EPA and the State shall be deemed to have agreed with the Air Force SEC member's written position with respect to the dispute.

(d) Upon escalation of a dispute to SAF/MIQ pursuant to Subsection 12.12(c), above, SAF/MIQ will review and seek to resolve the dispute in a manner acceptable to all Parties within seven (7) days. Upon request, and prior to issuing a recommended resolution, SAF/MIQ shall meet and confer with the EPA Administrator's Representative, the DHS Chief Deputy Director, and the RWQCB Executive Officer to discuss the issue under dispute. SAF/MIQ shall provide EPA and the State with a proposed resolution of the dispute. In the event EPA or the State does not concur with the SAF/MIQ proposed resolution of the dispute, such nonconcurrence will be transmitted in writing to SAF/MIQ within seven (7) days of receipt of his/her issuance of the proposed resolution. Failure to transmit such nonconcurrence will be presumed to signify concurrence. If EPA or the State does not concur, such agency will retain any right it possesses with regard to the issue raised in the dispute under Subsection 11.6.

12.13 For the purposes of the dispute resolution process, and other decisions of the Parties that may be taken to dispute resolution, the Parties agree as follows:

(a) DHS and RWQCB, as agencies of the State of California, will jointly designate which of the two agencies shall voice the State's position for various issues and subjects, and which of the two

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agencies shall voice the State's position for all other issues or subjects which have not been specifically designated. DHS and RWQCB shall provide EPA and the Air Force with an initial designation in writing within 30 days after the execution of this Agreement. This initial designation is subject to modification by DHS and RWQCB. DHS and RWQCB shall notify EPA and the Air Force in writing of such modification within 10 days after the modification is made.

(b) DHS and RWQCB shall represent the State with a single voice, as designated in accordance with Subsection 12.13(a) above, throughout the dispute resolution process (Section 12) and in all decisions of the Parties which may be taken to dispute resolution, including but not limited to the following:

(1) Invocation of dispute resolution for Draft Final Primary Documents (Subsection 7.8);

(2) Subsequent modification of final documents (Subsection 7.10);

(3) Agreement on deadlines (Section 8);

(4) Extension of deadlines (Section 9);

(5) Work stoppage (Subsection 11.2);

(6) Enforcement of the terms of this Agreement (Subsection 13.5);

(7) Termination of the Agreement (Section 30);

(8) State support services (Section 34);

(9) State participation contingency (Section 35);

(10) Effective date and public comment (Section 36).

13. ENFORCEABILITY

13.1 The Parties agree that:

(a) Upon the effective date of this Agreement, any standard, regulation, condition, requirement or order which has become effective under CERCLA and is incorporated into this Agreement is enforceable by any person pursuant to CERCLA section 310, and any violation of such standard, regulation, condition, requirement or order will be subject to civil penalties under CERCLA sections 310(c) and 109;

(b) All timetables or deadlines associated with the RI/FS shall be enforceable by any person pursuant to CERCLA section 310, and any violation of such timetables or deadlines will be subject to civil penalties under CERCLA sections 310(c) and 109;

(c) All terms and conditions of this Agreement which relate to remedial actions, including corresponding timetables, deadlines or schedules, and all work associated with remedial actions, shall be enforceable by any person pursuant to CERCLA section 310(c), and any violation of such terms or conditions will be subject to civil penalties under CERCLA sections 310(c) and 109; and

(d) Any final resolution of a dispute pursuant to Section 12 (Dispute Resolution) of this Agreement which establishes a term, condition, timetable, deadline or schedule shall be enforceable by any person pursuant to CERCLA section 310(c), and any violation of such terms, condition, timetable, deadline or schedule will be subject to civil penalties under CERCLA sections 310(c) and 109.

13.2 Nothing in this Agreement shall be construed as authorizing any person to seek judicial review of any action or work where review is barred by any provision of CERCLA including CERCLA section 113(h).

13.3 Nothing in this Agreement shall be construed as a restriction or waiver of any rights the EPA or the State may have under CERCLA and applicable State law, including but not limited to any rights under sections 113 and 310, 42 U.S.C. § 9613 and 9659. The Air Force does not waive any rights it may have under CERCLA section 120, SARA section 211 and Executive Order 12580.

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13.4 The Parties agree to exhaust their rights under Section 12 (Dispute Resolution) prior to exercising any rights to judicial review that they may have.

13.5 The Parties agree that all Parties shall have the right to enforce the terms of this Agreement.

14. STIPULATED PENALTIES

14.1 In the event that the Air Force fails to submit a primary document listed in Section 7 (Consultation) to EPA and the State pursuant to the appropriate timetable or deadline, established pursuant to Section 8 (Deadlines), in accordance with the requirements of this Agreement, or fails to comply with a term or condition of this Agreement which relates to an operable unit or final remedial action, EPA may assess a stipulated penalty against the Air Force. The State may also recommend to EPA that a stipulated penalty be assessed. A stipulated penalty may be assessed in an amount not to exceed \$5,000 for the first week (or part thereof), and \$10,000 for each additional week (or part thereof) for which a failure set forth in this Subsection occurs.

14.2 Upon determining that the Air Force has failed in a manner set forth in Subsection 14.1, EPA shall so notify the Air Force in writing. If the failure in question is not already subject to dispute resolution at the time such notice is received, the Air Force shall have fifteen (15) days after receipt of the notice to invoke dispute resolution on the question of whether the failure did in fact occur. The Air Force shall not be liable for the stipulated penalty assessed by EPA if the failure is determined, through the dispute resolution process, not to have occurred. No assessment of a stipulated penalty shall be final until the conclusion of dispute resolution procedures related to the assessment of the stipulated penalty.

14.3 The annual reports required by CERCLA section 120(e)(5), 42 U.S.C. § 9620(e)(5), shall include, with respect to each final assessment of a stipulated penalty against the Air Force under this Agreement, each of the following:

- (a) The Federal Facility responsible for the failure;
- (b) A statement of the facts and circumstances giving rise to the failure;

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(c) A statement of any administrative or other corrective action taken at the relevant Federal Facility, or a statement of why such measures were determined to be inappropriate;

(d) A statement of any additional action taken by or at the Federal Facility to prevent recurrence of the same type of failure; and

(e) The total dollar amount of the stipulated penalty assessed for the particular failure.

14.4 Stipulated penalties assessed pursuant to this Section shall be payable to the Hazardous Substances Response Trust Fund only in the manner and to the extent expressly provided for in acts authorizing funds for, and appropriations to, the DOD. EPA and the State agree, to the extent allowed by law, to divide equally any stipulated penalties paid on behalf of George AFB with fifty (50) percent allocated to the EPA Hazardous Substance Response Trust Fund and fifty (50) percent allocated to the DHS and RWQCB.

14.5 In no event shall this Section give rise to a stipulated penalty in excess of the amount set forth in CERCLA section 109, 42 U.S.C. § 9609.

14.6 This Section shall not affect the Air Force's ability to obtain an extension of a timetable, deadline or schedule pursuant to Section 9 (Extensions).

14.7 Nothing in this Agreement shall be construed to render any officer or employee of the Air Force personally liable for the payment of any stipulated penalty assessed pursuant to this Section.

15. FUNDING

15.1 It is the expectation of the Parties to this Agreement that all obligations of the Air Force arising under this Agreement will be fully funded. The Air Force agrees to seek sufficient funding through the DOD budgetary process to fulfill its obligations under this Agreement.

15.2 In accordance with CERCLA section 120 (e)(5)(B), 42 U.S.C. § 9620 (e)(5)(B), the Air Force shall include, in its submission to the

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Department of Defense annual report to Congress, the specific cost estimates and budgetary proposals associated with the implementation of this Agreement.

15.3 Any requirement for the payment or obligation of funds, including stipulated penalties, by the Air Force established by the terms of this Agreement shall be subject to the availability of appropriated funds, and no provision herein shall be interpreted to require obligation or payment of funds in violation of the Anti-Deficiency Act, 31 U.S.C. § 1341. In cases where payment or obligation of funds would constitute a violation of the Anti-Deficiency Act, the dates established requiring the payment or obligation of such funds shall be appropriately adjusted.

15.4 If appropriated funds are not available to fulfill the Air Force's obligations under this Agreement, EPA and the State reserve the right to initiate an action against any other person, or to take any response action, which would be appropriate absent this Agreement.

15.5 Funds authorized and appropriated annually by Congress under the "Environmental Restoration, Defense" appropriation in the Department of Defense Appropriation Act and allocated by the Deputy Assistant Secretary of Defense for Environment to the Air Force will be the source of funds for activities required by this Agreement consistent with section 211 of CERCLA, 10 U.S.C. Chapter 160. However, should the Environmental Restoration, Defense appropriation be inadequate in any year to meet the total Air Force CERCLA implementation requirements, the DOD shall employ and the Air Force shall follow a standardized DOD prioritization process which allocates that year's appropriations in a manner which maximizes the protection of human health and the environment. A standardized DOD prioritization model shall be developed and utilized with the assistance of EPA and the states.

16. EXEMPTIONS

16.1 The obligation of the Air Force to comply with the provisions of this Agreement may be relieved by:

(a) A Presidential order of exemption issued pursuant to the provisions of CERCLA section 120(j)(1), 42 U.S.C. § 9620(j)(1), or RCRA section 6001, 42 U.S.C. § 6961; or

(b) The order of an appropriate court.

16.2 The State reserves any statutory right it may have to challenge any Presidential Order relieving the Air Force of its obligations to comply with this Agreement.

17. STATUTORY COMPLIANCE/RCRA-CERCLA INTEGRATION

17.1 The Parties intend to integrate the Air Force's CERCLA response obligations and RCRA corrective action obligations which relate to the release(s) of hazardous substances, hazardous wastes, pollutants or contaminants covered by this Agreement into this comprehensive Agreement. Therefore, the Parties intend that activities covered by this Agreement will achieve compliance with CERCLA, 42 U.S.C. § 9061 et. seq.; to satisfy the corrective action requirements of RCRA section 3004(u) & (v), 42 U.S.C. § 6924(u) & (v), for a RCRA permit, and RCRA section 3008(h), 42 U.S.C. § 6928 (h), for interim status facilities; and to meet or exceed all applicable or relevant and appropriate federal and State laws and regulations, to the extent required by CERCLA section 121, 42 U.S.C. § 9621.

17.2 Based upon the foregoing, the Parties intend that any remedial action selected, implemented and completed under this Agreement will be protective of human health and the environment such that remediation of releases covered by this Agreement shall obviate the need for further corrective action under RCRA (i.e., no further corrective action shall be required). The Parties agree that with respect to releases of hazardous waste covered by this Agreement, RCRA shall be considered an applicable or relevant and appropriate requirement pursuant to CERCLA section 121, 42 U.S.C. § 9621.

17.3 The Parties recognize that the requirement to obtain permits for response actions undertaken pursuant to this Agreement shall be as provided for in CERCLA and the NCP. The Parties recognize that ongoing activities outside the scope of this Agreement at George AFB may require the issuance of permits under federal and State laws. This Agreement does not affect the requirements, if any, to obtain such permits. However, if a permit is issued to the Air Force for ongoing hazardous waste management activities at the Site, the issuing party shall reference and incorporate in a permit condition any appropriate provision, including appropriate schedules (and the provision for extension of such schedules), of this Agreement into

such permit. The Parties intend that any judicial review of any permit condition which references this Agreement shall, to the extent authorized by law, only be reviewed under the provisions of CERCLA.

18. REMEDIAL PROJECT MANAGERS

18.1 On or before the effective date of this Agreement, EPA, the Air Force, DHS and RWQCB shall each designate a Remedial Project Manager and an alternate (each hereinafter referred to as Remedial Project Manager), for the purpose of overseeing the implementation of this agreement. The Remedial Project Managers shall be responsible on a daily basis for assuring proper implementation of the RI/FS and the RD/RA in accordance with the terms of the Agreement. In addition to the formal notice provisions set forth in Section 21 (Notification), to the maximum extent possible, communications among the Air Force, EPA, and the State on all documents, including reports, comments, and other correspondence concerning the activities performed pursuant to this Agreement, shall be directed through the Remedial Project Managers.

18.2 The Air Force, EPA, DHS, and RWQCB may change their respective Remedial Project Managers. The other Parties shall be notified in writing within five days of the change.

18.3 The Remedial Project Managers shall meet to discuss progress as described in Subsection 7.5. Although the Air Force has ultimate responsibility for meeting its respective deadlines or schedule, the Remedial Project Managers shall assist in this effort by consolidating the review of primary and secondary documents whenever possible, and by scheduling progress meetings to review reports, evaluate the performance of environmental monitoring at the Site, review RI/FS or RD/RA progress, discuss target dates for elements of the RI/FS to be conducted in the following one hundred and eighty (180) days, resolve disputes, and adjust deadlines or schedules. At least one week prior to each scheduled progress meeting, the Air Force will provide to the other Parties a draft agenda and summary of the status of the work subject to this Agreement. Unless the Remedial Project Managers agree otherwise, the minutes of each progress meeting, with the meeting agenda and all documents discussed during the meeting (which were not previously provided) as attachments, shall constitute a progress report, which will be sent to all Remedial Project Managers within ten business days after the meeting ends. If an extended period

occurs between Remedial Project Manager progress meetings, the Remedial Project Managers may agree that the Air Force shall prepare an interim progress report and provide it to the other Parties. The report shall include the information that would normally be discussed in a progress meeting of the RPMs. Other meetings shall be held more frequently upon request by any Remedial Project Manager.

18.4 The authority of the Remedial Project Managers shall include, but is not limited to:

(a) Taking samples and ensuring that sampling and other field work is performed in accordance with the terms of any final work plan and QAPP;

(b) Observing, and taking photographs and making such other reports on the progress of the work as the Remedial Project Managers deem appropriate, subject to the limitations set forth in Section 25 (Access to Federal Facility) hereof;

(c) Reviewing records, files and documents relevant to the work performed;

(d) Determining the form and specific content of the Remedial Project Manager meetings and of progress reports based on such meetings; and

(e) Recommending and requesting minor field modifications to the work to be performed pursuant to a final work plan, or in techniques, procedures, or design utilized in carrying out such work plan.

(f) The authority vested by the National Contingency Plan, Section 300.120(b)(1), in the Air Force RPM as On Scene Coordinator and Remedial Project Manager, which will be exercised in consultation with the EPA and State RPMs and in accordance with the procedures specified in this Agreement.

18.5 Any minor field modification proposed by any Party pursuant to this Section must be approved orally by all Parties' Remedial Project Managers to be effective. The Air Force Remedial Project Manager will make a contemporaneous record of such modification and approval in a written log, and a copy of the log

entry will be provided as part of the next progress report. Even after approval of the proposed modification, no Remedial Project Manager will require implementation by a government contractor without approval of the appropriate Government Contracting Officer.

18.6 The Remedial Project Manager for the Air Force shall be responsible for day-to-day field activities at the Site. The Air Force Remedial Project Manager or other designated employee of George AFB shall be present at the Site or reasonably available to supervise work during all hours of work performed at the Site pursuant to this Agreement. For all times that such work is being performed, the Air Force Remedial Project Manager shall inform the command post at George AFB of the name and telephone number of the designated employee responsible for supervising the work.

18.7 The Remedial Project Managers shall be reasonably available to consult on work performed pursuant to this Agreement and shall make themselves available to each other for the pendency of this Agreement. The absence of EPA, the State, or Air Force Remedial Project Managers from the facility shall not be cause for work stoppage of activities taken under this Agreement.

19. PERMITS

19.1 The Parties recognize that under sections 121(d) and 121(e)(1) of CERCLA, 42 U.S.C. § 9621(d) and 9621(e)(1), and the NCP, portions of the response actions called for by this Agreement and conducted entirely on-site are exempted from the procedural requirement to obtain a federal, State, or local permit but must satisfy all the applicable or relevant and appropriate federal and State standards, requirements, criteria, or limitations which would have been included in any such permit.

19.2 This Section is not intended to relieve the Air Force from any and all regulatory requirements, including obtaining a permit, whenever it proposes a response action involving either the movement of hazardous substances, pollutants, or contaminants off-site, or the conduct of a response action off-site.

19.3 The Air Force shall notify EPA and the State in writing of any permit required for off-site activities as soon as it becomes aware of the requirement. The Air Force agrees to obtain any permits necessary for the performance of any work under this

Agreement. Upon request, the Air Force shall provide EPA and the State copies of all such permit applications and other documents related to the permit process. Copies of permits obtained in implementing this Agreement shall be appended to the appropriate submittal or progress report. Upon request by the Air Force Remedial Project Manager, the Remedial Project Managers of EPA and the State will assist George AFB to the extent feasible in obtaining any required permit.

20. QUALITY ASSURANCE

20.1 In order to provide quality assurance and maintain quality control regarding all field work and sample collection performed pursuant to this Agreement, the Air Force agrees to designate a Quality Assurance Officer (QAO) who will ensure and document that all work is performed in accordance with approved work plans, sampling plans and QAPPs. The QAO shall maintain for inspection a log of quality assurance field activities and provide a copy to the Parties upon request.

20.2 To ensure compliance with the QAPP, the Air Force shall arrange for access, upon request by EPA or the State, to all laboratories performing analysis on behalf of the Air Force pursuant to this Agreement.

21. NOTIFICATION

21.1 All Parties shall transmit primary and secondary documents, and comments thereon, and all notices required herein by next day mail, hand delivery, or facsimile. Time limitations shall commence upon receipt.

21.2 Transmittals to the individual Parties pursuant to this Agreement shall be sent to the addresses specified by the Parties. Initially these shall be as follows:

Katherine Moore
Remedial Project Manager, George AFB
U.S. Environmental Protection Agency, Region 9
Hazardous Waste Management Division, H-7-3
1235 Mission Street
San Francisco, CA 94103;

and

Jesus I. Sotelo
California Department of Health Services
Toxic Substances Control Division
Region 4, Site Mitigation Unit
245 West Broadway, Suite 350
Long Beach, CA 94710

and

Averil Bigar/Ken Carter
California Water Quality Control Board
Lahontan Region
15428 Civic Drive, Suite 100
Victorville, CA 92392-2359

and

Denise Caron
831 CSG/DEV
George AFB, CA 92394-5000

21.3 All routine correspondence may be sent via first class mail to the above addressees.

22. DATA AND DOCUMENT AVAILABILITY

22.1 Each Party shall make all sampling results, test results or other data or documents generated through the implementation of this Agreement available to the other Parties. All quality assured data shall be supplied within sixty (60) days of its collection. If the quality assurance procedure is not completed within sixty (60) days, raw data or results shall be submitted within the sixty (60) day period and quality assured data or results shall be submitted as soon as they become available.

22.2 The sampling Party's Remedial Project Manager shall notify the other Parties' Remedial Project Managers not less than 10 days in advance of any sample collection. If it is not possible to provide 10 days prior notification, the sampling Party's Remedial Project Manager shall notify the other Remedial Project Managers as soon as possible after becoming aware that samples will be collected.

Each Party shall allow, to the extent practicable, split or duplicate samples to be taken by the other Parties or their authorized representatives.

23. RELEASE OF RECORDS

23.1 The Parties may request of one another access to or a copy of any record or document relating to this Agreement or the IRP. If the Party that is the subject of the request (the originating Party) has the record or document, that Party shall provide access to or a copy of the record or document; provided, however, that no access to or copies of records or documents need be provided if they are subject to claims of attorney-client privilege, attorney work product, deliberative process, enforcement confidentiality, or properly classified for national security under law or executive order.

23.2 Records or documents identified by the originating Party as confidential pursuant to other non-disclosure provisions of the Freedom of Information Act, 5 U.S.C. § 552, or the California Public Records Act, section 6250, et seq. of the California Government Code, shall be released to the requesting Party, provided the requesting Party states in writing that it will not release the record or document to the public without prior approval of the originating Party or after opportunity to consult and, if necessary, contest any preliminary decision to release a document, in accordance with applicable statutes and regulations. Records or documents which are provided to the requesting Party and which are not identified as confidential may be made available to the public without further notice to the originating Party.

23.3 The Parties will not assert one of the above exemptions, including any available under the Freedom of Information Act or California Public Records Act, even if available, if no governmental interest would be jeopardized by access or release as determined solely by that Party.

23.4 Subject to section 120(j)(2) of CERCLA, 42 U.S.C. § 9620(j)(2), any documents required to be provided by Section 7 (Consultation), and analytical data showing test results will always be releasable and no exemption shall be asserted by any Party.

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23.5 This Section does not change any requirement regarding press releases in Section 26 (Public Participation and Community Relations).

23.6 A determination not to release a document for one of the reasons specified above shall not be subject to Section 12 (Dispute Resolution). Any Party objecting to another Party's determination may pursue the objection through the determining Party's appeal procedures.

24. PRESERVATION OF RECORDS

24.1 Despite any document retention policy to the contrary, the Parties shall preserve, during the pendency of this Agreement and for a minimum of ten years after its termination, all records and documents contained in the Administrative Record and any additional records and documents retained in the ordinary course of business which relate to the actions carried out pursuant to this Agreement. After this ten year period, each Party shall notify the other Parties at least 45 days prior to destruction of any such documents. Upon request by any Party, the requested Party shall make available such records or copies of any such records, unless withholding is authorized and determined appropriate by law.

25. ACCESS TO FEDERAL FACILITY

25.1 Without limitations on any authority conferred on EPA or the State by statute or regulation, EPA, the State or their authorized representatives, shall be allowed to enter George AFB at reasonable times for purposes consistent with the provisions of the Agreement, subject to any statutory and regulatory requirements necessary to protect national security or mission essential activities. Such access shall include, but not be limited to, reviewing the progress of the Air Force in carrying out the terms of this Agreement; ascertaining that the work performed pursuant to this Agreement is in accordance with approved work plans, sampling plans and QAPPs; and conducting such tests as EPA, the State, or the Remedial Project Managers deem necessary.

25.2 The Air Force shall honor all reasonable requests for access by the EPA or the State, conditioned upon presentation of proper credentials. The Air Force Remedial Project Manager will provide briefing information, coordinate access and escort to

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restricted or controlled-access areas, arrange for base passes and coordinate any other access requests which arise.

25.3 EPA and the State shall provide reasonable notice to the Air Force Remedial Project Manager to request any necessary escorts. EPA and the State shall not use any camera, sound recording or other recording device at George AFB without the permission of the Air Force Remedial Project Manager. The Air Force shall not unreasonably withhold such permission.

25.4 The access by EPA and the State, granted in Subsection 25.1 of this Section, shall be subject to those regulations necessary to protect national security or mission essential activities. Such regulation shall not be applied so as to unreasonably hinder EPA or the State from carrying out their responsibilities and authority pursuant to this Agreement. In the event that access requested by either EPA or the State is denied by the Air Force, the Air Force shall provide an explanation within 48 hours of the reason for the denial, including reference to the applicable regulations, and, upon request, a copy of such regulations. The Air Force shall expeditiously make alternative arrangements for accommodating the requested access. The Parties agree that this Agreement is subject to CERCLA section 120(j), 42 U.S.C. § 9620(j), regarding the issuance of Site Specific Presidential Orders as may be necessary to protect national security.

25.5 If EPA or the State requests access in order to observe a sampling event or other work being conducted pursuant to this Agreement, and access is denied or limited, the Air Force agrees to reschedule or postpone such sampling or work if EPA or the State so requests, until such mutually agreeable time when the requested access is allowed. The Air Force shall not restrict the access rights of the EPA or the State to any greater extent than the Air Force restricts the access rights of its contractors performing work pursuant to this Agreement.

25.6 All Parties with access to George AFB pursuant to this Section shall comply with all applicable health and safety plans.

25.7. To the extent the activities pursuant to this Agreement must be carried out on other than Air Force property, the Air Force shall use its best efforts, including its authority under CERCLA section 104, to obtain access agreements from the owners which shall provide reasonable access for the Air Force, EPA, and the State and

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their representatives. The Air Force may request the assistance of the State in obtaining such access, and upon such request, the State will use its best efforts to obtain the required access. In the event that the Air Force is unable to obtain such access agreements, the Air Force shall promptly notify EPA and the State.

25.8 With respect to non-Air Force property on which monitoring wells, pumping wells, or other response actions are to be located, the Air Force shall use its best efforts to ensure that any access agreements shall provide for the continued right of entry for all Parties for the performance of such remedial activities. In addition, any access agreement shall provide that no conveyance of title, easement, or other interest in the property shall be consummated without the continued right of entry.

25.9 Nothing in this Section shall be construed to limit EPA's and the State's full right of access as provided in 42 U.S.C. § 9604(e) and California Health and Safety Code section 25185, except as that right may be limited by 42 U.S.C. § 9620(j)(2), Executive Order 12580, or other applicable national security regulations or federal law.

26. PUBLIC PARTICIPATION AND COMMUNITY RELATIONS

26.1 The Parties agree that any proposed removal actions and remedial action alternative(s) and plan(s) for remedial action at the Site arising out of this Agreement shall comply with the administrative record and public participation requirements of CERCLA sections 113(k) and 117, 42 U.S.C. § 9313(k) and 9617, relevant community relations provisions in the NCP, EPA guidances, and, to the extent they may apply, State statutes and regulations. The State agrees to inform the Air Force of all State requirements which it believes pertain to public participation. The provisions of this Section shall be carried out in a manner consistent with, and shall fulfill the intent of, Section 17 (Statutory Compliance/RCRA-CERCLA Integration).

26.2 The Air Force shall develop and implement a community relations plan (CRP) addressing the environmental activities and elements of work undertaken by the Air Force.

26.3 The Air Force shall establish and maintain an administrative record at a place, at or near the Federal Facility,

which is freely accessible to the public, which record shall provide the documentation supporting the selection of each response action. The administrative record shall be established and maintained in accordance with relevant provisions in CERCLA, the NCP, and EPA guidances. A copy of each document placed in the administrative record, not already provided, will be provided by the Air Force to the other Parties. The administrative record developed by the Air Force shall be updated and new documents supplied to the other Parties on at least a quarterly basis. An index of documents in the administrative record will accompany each update of the administrative record.

26.4 Except in case of an emergency, any Party issuing a press release with reference to any of the work required by this Agreement shall advise the other Parties of such press release and the contents thereof, at least 48 hours prior to issuance.

27. FIVE YEAR REVIEW

27.1 Consistent with 42 U.S.C. § 9621(c) and in accordance with this Agreement, if the selected remedial action results in any hazardous substances, pollutants or contaminants remaining at the Site, the Parties shall review the remedial action program at least every five (5) years after the initiation of the final remedial action to assure that human health and the environment are being protected by the remedial action being implemented.

27.2 If, upon such review, any of the Parties proposes additional work or modification of work, such proposal shall be handled under Subsection 7.10 of this Agreement.

27.3 To synchronize the five-year reviews for all operable units and final remedial actions, the following procedure will be used: Review of operable units will be conducted every five years counting from the initiation of the first operable unit, until initiation of the final remedial action for the Site. At that time a separate review for all operable units shall be conducted. Review of the final remedial action (including all operable units) shall be conducted every five years, thereafter.

28. TRANSFER OF REAL PROPERTY

28.1 The Parties recognize that the Department of Defense shall retain liability in accordance with CERCLA Section 107, 42 U.S.C. § 9607, notwithstanding any change in ownership of the real property comprising the Federal Facility. The Air Force shall not transfer any real property comprising the Federal Facility except in compliance with section 120(h) of CERCLA, 42 U.S.C. § 9620(h). Prior to any transfer of any portion of the real property comprising the Federal Facility which includes either (a) an area within which any release of hazardous substance has come to be located, or (b) any other property which is necessary for performance of the remedial action, the Air Force shall give written notice of that condition to the recipient of the property; and at least thirty (30) days prior to any such transfer, the Air Force shall notify all Parties of the transfer of any real property subject to this Agreement and the provisions made for any additional remedial actions, if required.

28.2 Until six months following the effective date of the final regulations implementing CERCLA section 120(h)(2), 42 U.S.C. § 9620(h)(2), the Air Force agrees to comply with the most recent version of the regulations as proposed and all other substantive and procedural provisions of CERCLA section 120(h) and Subsection 28.1 of this Section.

29. AMENDMENT OR MODIFICATION OF AGREEMENT

29.1 This Agreement can be amended or modified solely upon written consent of all Parties. Such amendments or modifications may be proposed by any Party and shall be effective the third business day following the day the last Party to sign the amendment or modification sends its notification of signing to the other Parties. The Parties may agree to a different effective date.

30. TERMINATION OF THE AGREEMENT

30.1 At the completion of the remedial action, the Air Force shall prepare a Project Closeout Report certifying that all requirements of this Agreement have been completed. The provisions of this Agreement shall be deemed satisfied and terminated upon receipt by the Air Force of written notice from EPA, with concurrence of the State, that the Air Force has demonstrated that all the terms of this Agreement have been completed. If EPA

denies or otherwise fails to grant a termination notice within 90 days of receiving a written Air Force request for such notice, EPA shall provide a written statement of the basis for its denial and describe the Air Force actions which, in the view of EPA, would be a satisfactory basis for granting a notice of completion. Such denial shall be subject to dispute resolution.

30.2 This provision shall not affect the requirements for periodic review at maximum five year intervals of the efficacy of the remedial actions.

31. COVENANT NOT TO SUE AND RESERVATION OF RIGHTS

31.1 In consideration for the Air Force's compliance with this Agreement, and based on the information known to the Parties or reasonably available on the effective date of this Agreement, EPA, the Air Force, and the State agree that compliance with this Agreement shall stand in lieu of any administrative, legal, and equitable remedies against the Air Force available to them regarding the releases or threatened releases of hazardous substances including hazardous wastes, pollutants or contaminants at the Site which are the subject of any RI/FS conducted pursuant to this Agreement and which have been or will be adequately addressed by the remedial actions provided for under this Agreement.

31.2 Notwithstanding this Section, or any other Section of this Agreement, the State shall retain any statutory right it may have to obtain judicial review of any final decision of the EPA on selection of remedial action pursuant to any authority the State may have under CERCLA, including sections 121(e)(2), 121(f), 310, and 113.

32. OTHER CLAIMS

32.1 Nothing in this Agreement shall constitute or be construed as a bar or release from any claim, cause of action or demand in law or equity by or against any person, firm, partnership or corporation not a signatory to this Agreement for any liability it may have arising out of or relating in any way to the generation, storage, treatment, handling, transportation, release, or disposal of any hazardous substances, hazardous waste, pollutants, or contaminants found at, taken to, or taken from the Federal Facility. Unless specifically agreed to in writing by the Parties, EPA and the

State shall not be held as a party to any contract entered into by the Air Force to implement the requirements of this Agreement.

32.2 This Agreement shall not restrict any Party from taking any legal or response action for any matter not part of the subject matter of this Agreement.

33. RECOVERY OF EPA EXPENSES

33.1 The Parties agree to amend this Agreement at a later date in accordance with any subsequent national resolution of the issue of cost reimbursement. Pending such resolution, EPA reserves any rights it may have with respect to cost reimbursement.

34. STATE SUPPORT SERVICES

34.1 Compensation for state support services rendered in connection with this Agreement is governed by the provisions of the Defense/State Memorandum of Agreement (DSMOA) which was executed on May 31, 1990, between DHS on behalf of the State of California and the Department of Defense.

34.2 In the event that the DSMOA is terminated or no longer in effect for any reason, and until a new DSMOA takes effect, the Parties agree to the provisions in this subsection and the remainder of Section 34. The Air Force agrees to request funding and reimburse the State, subject to the conditions and limitations set forth in this Section, and subject to Section 15 (Funding), for all reasonable costs it incurs in providing services in direct support of the Air Force's environmental restoration activities pursuant to this Agreement at the Site.

34.3 Reimbursable expenses shall consist only of actual expenditures required to be made and actually made by the State in providing the following assistance to George Air Force Base:

(a) Timely technical review and substantive comment on reports or studies which the Air Force prepares in support of its response actions and submits to the State.

(b) Identification and explanation of unique State requirements applicable to military installations in performing

response actions, especially State applicable or relevant and appropriate requirements (ARARs).

(c) Field visits to ensure investigations and cleanup activities are implemented in accordance with appropriate State requirements, or in accordance with agreed upon conditions between the State and the Air Force that are established in the framework of this Agreement.

(d) Support and assistance to the Air Force in the conduct of public participation activities in accordance with federal and State requirements for public involvement.

(e) Participation in the review and comment functions of Air Force Technical Review Committees.

(f) Other services specified in this Agreement.

34.4 Within ninety (90) days after the end of each quarter of the federal fiscal year, the State shall submit to the Air Force an accounting of all State costs actually incurred during that quarter in providing direct support services under this Section. Such accounting shall be accompanied by cost summaries and be supported by documentation which meets federal auditing requirements. The summaries will set forth employee-hours and other expenses by major type of support service. All costs submitted must be for work directly related to implementation of this Agreement and not inconsistent with either the National Contingency Plan (NCP) or the requirements described in OMB Circulars A-87 (Cost Principles for State and Local Governments) and A-128 (Audits for State and Local Cooperative Agreements with State and Local Governments) and Standard Forms 424 and 270. The Air Force has the right to audit cost reports used by the State to develop the cost summaries. Before the beginning of each fiscal year, the State shall supply a budget estimate of what it plans to do in the next year in the same level of detail as the billing documents.

34.5 Except as allowed pursuant to Subsections 34.6 or 34.7 below, within ninety (90) days of receipt of the accounting provided pursuant to Subsection 34.4 above, the Air Force shall reimburse the State in the amount set forth in the accounting.

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34.6 In the event the Air Force contends that any of the costs set forth in the accounting provided pursuant to Subsection 34.3 above are not properly payable, the matter shall be resolved through a bilateral dispute resolution process set forth at Subsection 34.10 below.

34.7 The Air Force shall not be responsible for reimbursing the State for any costs actually incurred in the implementation of this Agreement in excess of one percent (1%) of the Air Force total lifetime project costs incurred through construction of the remedial action(s). This total reimbursement limit is currently estimated to be a sum of \$330,000 over the life of the Agreement. Circumstances could arise whereby fluctuations in the Air Force estimates or actual final costs through the construction of the final remedial action creates a situation where the State receives reimbursement in excess of one percent of these costs. Under these circumstances, the State remains entitled to payment for services rendered prior to the completion of a new estimate if the services are within the ceiling applicable under the previous estimate. This Section (34) does not cover the costs of services rendered prior to October 17, 1986; services at properties not owned by the Federal government; and activities funded from sources other than Defense Environmental Restoration Account appropriations.

(a) Funding of support services must be constrained so as to avoid unnecessary diversion of the limited Defense Environmental Restoration Account funds available for the overall cleanup, and

(b) Support services should not be disproportionate to overall project costs and budget.

34.8 Either the Air Force or the State may request, on the basis of significant upward or downward revisions in the Air Force's estimate of its total lifetime costs through construction used in Subsection 34.7 above, a renegotiation of the cap. Failing an agreement, either the Air Force or the State may initiate dispute resolution in accordance with Subsection 34.10 below.

34.9 The State agrees to seek reimbursement for its expenses solely through the mechanisms established in this Section, and reimbursement provided under this Section shall be in settlement of

any claims for State response costs relative to the Air Force's environmental restoration activities at the Site.

34.10 Section 12 (Dispute Resolution) notwithstanding, this Subsection shall govern any dispute between the Air Force and the State regarding the application of this Section or any matter controlled by this Section including, but not limited to, allowability of expenses and limits on reimbursement. The provisions of Subsection 12.13 (State single voice) shall apply to this Section. While it is the intent of the Air Force and the State that these procedures shall govern resolution of disputes concerning State reimbursement, informal dispute resolution is encouraged.

(a) The Air Force, DHS and RWQCB RPMs shall be the initial points of contact for coordination of dispute resolution under this Subsection.

(b) If the Air Force, DHS and RWQCB RPMs are unable to resolve a dispute, the matter shall be referred to the DRC representatives (see Subsection 12.4) of DHS and RWQCB, and the Deputy Chief of Staff for Engineering and Services, Tactical Air Command (TAC/DE), as soon as practicable, but in any event within five (5) working days after the dispute is elevated by the RPMs.

(c) If TAC/DE and the DRC representatives of DHS and RWQCB are unable to resolve the dispute within ten (10) working days, the matter shall be elevated to the SEC representatives (see Subsection 12.6) of DHS and RWQCB, and the Deputy Assistant Secretary of the Air Force for Environment, Safety, and Occupational Health (SAF/MIQ).

(d) In the event SAF/MIQ and the SEC representatives of DHS and RWQCB are unable to resolve a dispute, the State retains any legal and equitable remedies it may have to recover its expenses. In addition, DHS and/or RWQCB may withdraw from this Agreement by giving sixty (60) days notice to the other Parties.

34.11 Nothing herein shall be construed to limit the ability of the Air Force to contract with the State for technical services that could otherwise be provided by a private contractor including, but not limited to:

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(a) Identification, investigation, and cleanup of any contamination beyond the boundaries of George Air Force Base;

(b) Laboratory analysis; or

(c) Data collection for field studies.

34.12 Nothing in this Agreement shall be construed to constitute a waiver of any claims by the State for any expenses incurred prior to the effective date of this Agreement.

35. STATE PARTICIPATION CONTINGENCY

35.1 If DHS and/or RWQCB fail(s) to sign this Agreement within thirty (30) days of notification of the signature by both EPA and the Air Force, this Agreement will be interpreted as if that Agency were not a Party and any reference to that Agency in this Agreement will have no effect. In addition, all other provisions of this Agreement notwithstanding, if that Agency does not sign this Agreement within the said thirty (30) days, George AFB shall only have to comply with any State requirements, conditions, or standards, including those specifically listed in this Agreement, which George AFB would otherwise have to comply with absent this Agreement.

35.2 In the event that the State does not sign this Agreement,

(a) the Air Force agrees to transmit all primary and secondary documents to appropriate State agencies at the same time such documents are transmitted to EPA; and

(b) EPA intends to consult with the appropriate State agencies with respect to the above documents and during implementation of this Agreement.

36. EFFECTIVE DATE AND PUBLIC COMMENT

36.1 This Agreement is effective upon signature by all the Parties to this Agreement.

36.2 The provisions of this Section shall be carried out in a manner consistent with, and shall fulfill the intent of Section 17 (Statutory Compliance/RCRA-CERCLA Integration).

36.3 Within fifteen (15) days after EPA, as the last signatory, executes this Agreement, the Air Force shall announce the availability of this Agreement to the public for a minimum forty-five (45) day period of review and comment, but ending no earlier than the date on which comments from EPA and the State are due, under Section 8, on proposed deadlines. Publication shall include publication in at least two major local newspapers of general circulation.

36.4 Promptly upon the completion of the comment period, the Air Force shall transmit to the other Parties copies of all comments received within the comment period. The Parties shall review all such comments and, within thirty (30) days after the close of the comment period, the Air Force shall prepare a written response to the public comments, for the review and concurrence of the other Parties. Within sixty (60) days after the close of the comment period, the Parties shall determine that either:

(a) the Agreement shall remain effective in its present form; or

(b) the Parties will seek to modify the Agreement pursuant to Section 29 (Amendment or Modification of Agreement), in response to the comments received. Absent or pending an amendment of the Agreement pursuant to Section 29, the Agreement will remain effective in its form as originally executed.

36.5 Any response action underway upon the effective date of this Agreement shall be subject to oversight by the Parties.

37. BASE CLOSURE

37.1 Closure of the Federal Facility will not affect the Air Force's obligation to comply with the terms of this Agreement and to specifically ensure the following:

(a) Continuing rights of access for EPA and the State in accordance with the terms and conditions of Section 25 (Access to Federal Facility);

(b) Availability of a Remedial Project Manager to fulfill the terms and conditions of the Agreement;

(c) Designation of alternate DRC members as appropriate for the purposes of implementing Section 12 (Dispute Resolution); and

(d) Adequate resolution of any other problems identified by the Remedial Project Managers regarding the effect of base closure on the implementation of this Agreement.

37.2 Base closure will not constitute a Force Majeure under Section 10 (Force Majeure), nor will it constitute good cause for extensions under Section 9 (Extensions), unless mutually agreed by the Parties.

38. APPENDICES AND ATTACHMENTS

38.1 Appendices shall be an integral and enforceable part of this Agreement. They shall include the most current versions of:

(a) All deadlines which have been or will be established in accordance with Section 8 (Deadlines) and which may be extended in accordance with Section 9 (Extensions).

(b) All final primary and secondary documents which will be created in accordance with Section 7 (Consultation).

38.2 Attachments shall be for information only and shall not be enforceable parts of this Agreement. The information in these attachments is provided to support the initial review and comment upon this Agreement, and they are only intended to reflect the conditions known at the signing of this Agreement. None of the facts related therein shall be considered admissions by, nor are they legally binding upon, any Party with respect to any claims unrelated to, or persons not a Party to, this Agreement. They shall include:

(a) Maps of the Federal Facility (see also Subsection 5.10)

(b) Chemicals of Concern

(c) Statement of Facts and Summary of Installation Restoration Program Activities

(d) Comprehensive RI/FS Workplan Outline

(e) Natural Resource Trustee Notification(s)

39. COUNTERPARTS

39.1 This Federal Facility Agreement may be executed and delivered in any number of counterparts, each of which when executed and delivered shall be deemed to be an original, but such counterparts shall together constitute one and the same document.

George AFB Federal Facility Agreement

Each undersigned representative of a Party certifies that he or she is fully authorized to enter into the terms and conditions of this Agreement and to legally bind such Party to this Agreement.

UNITED STATES AIR FORCE

DATE

RICHARD C. BETHUREM
Brigadier General, USAF
Commander, 831 Air Division
George Air Force Base, California

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

9.21.90
DATE

Daniel W. McGovern
DANIEL W. MCGOVERN
Regional Administrator
U.S. Environmental Protection Agency
Region 9

STATE OF CALIFORNIA
DEPARTMENT OF HEALTH SERVICES

DATE

JOHN HINTON, P.E.
Regional Administrator, Region 4
Toxic Substances Control Program
California Department of Health Services

STATE OF CALIFORNIA
REGIONAL WATER QUALITY CONTROL BOARD

DATE

HAROLD J. SINGER
Executive Officer
Regional Water Quality Control Board,
Lahontan Region

George AFB Federal Facility Agreement

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UNITED STATES AIR FORCE

DATE

RICHARD C. BETHUREM
Brigadier General, USAF
Commander, 831 Air Division
George Air Force Base, California

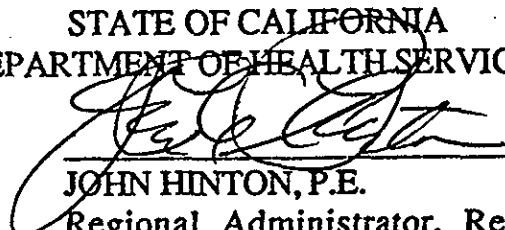
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE

DANIEL W. MCGOVERN
Regional Administrator
U.S. Environmental Protection Agency
Region 9

STATE OF CALIFORNIA
DEPARTMENT OF HEALTH SERVICES

9/17/90
DATE



JOHN HINTON, P.E.
Regional Administrator, Region 4
Toxic Substances Control Program
California Department of Health Services

STATE OF CALIFORNIA
REGIONAL WATER QUALITY CONTROL BOARD

DATE

HAROLD J. SINGER
Executive Officer
Regional Water Quality Control Board,
Lahontan Region

George AFB Federal Facility Agreement

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UNITED STATES AIR FORCE

DATE _____

RICHARD C. BETHUREM
Brigadier General, USAF
Commander, 831 Air Division
George Air Force Base, California

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE ✓

DANIEL W. MCGOVERN
Regional Administrator
U.S. Environmental Protection Agency
Region 9

STATE OF CALIFORNIA
DEPARTMENT OF HEALTH SERVICES

DATE _____

JOHN HINTON, P.E.
Regional Administrator, Region 4
Toxic Substances Control Program
California Department of Health Services

STATE OF CALIFORNIA
REGIONAL WATER QUALITY CONTROL BOARD

OCT 11, 1990
DATE

HAROLD J. SINGER
Executive Officer
Regional Water Quality Control Board,
Lahontan Region

ATTACHMENTS

- A) SITE MAPS**
- B) CHEMICALS OF CONCERN**
- C) STATEMENT OF FACTS & SUMMARY OF
IRP ACTIVITIES**
- D) COMPREHENSIVE WORKPLAN**

ATTACHMENT A
SITE MAPS

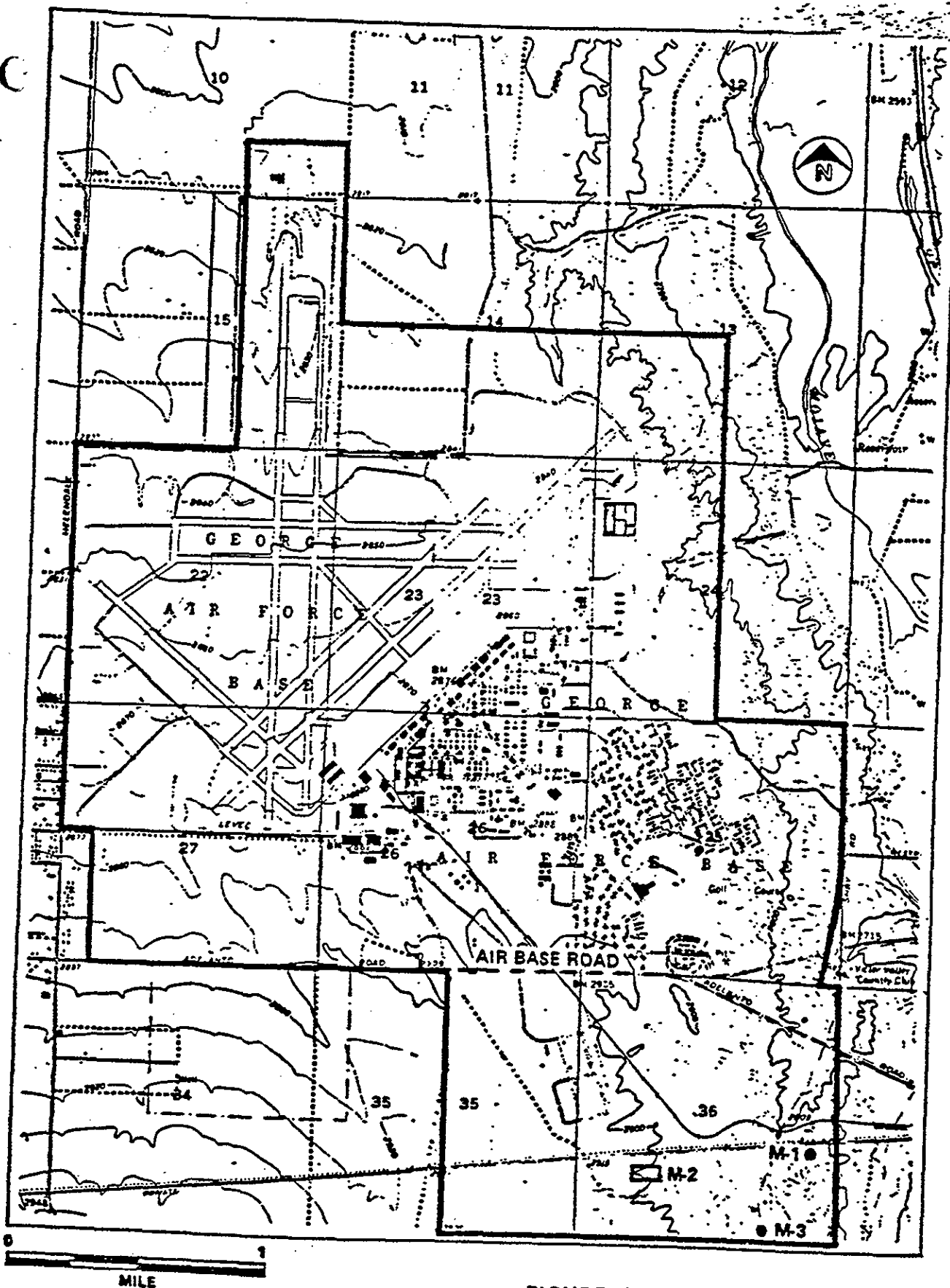


FIGURE 8
GEORGE AFB MUNITION DISPOSAL SITES
M-1 THROUGH M-3

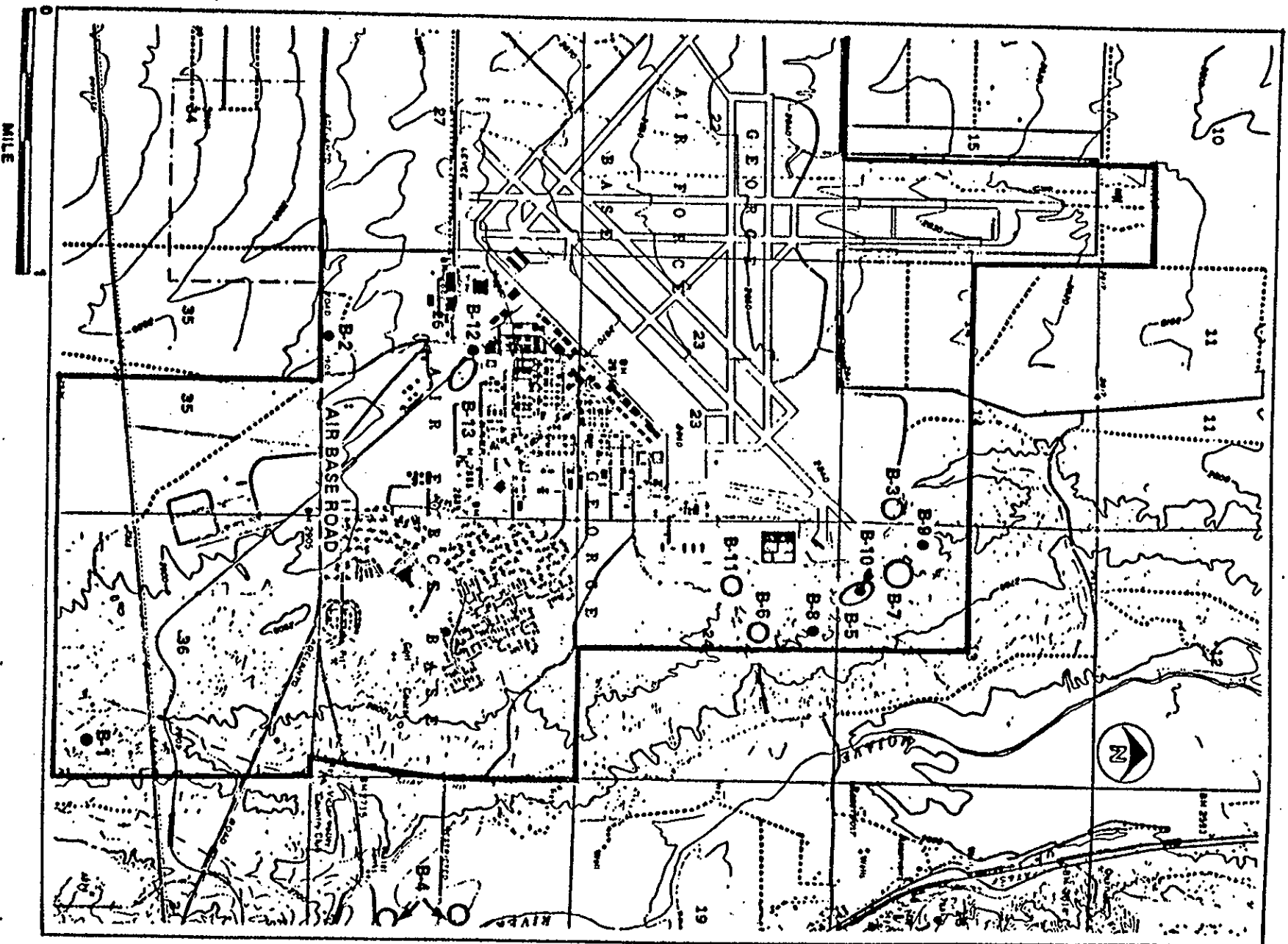


FIGURE 10
GEORGE AFB OTHER DUMP
OR BURIAL SITES
B-1 THROUGH B-13

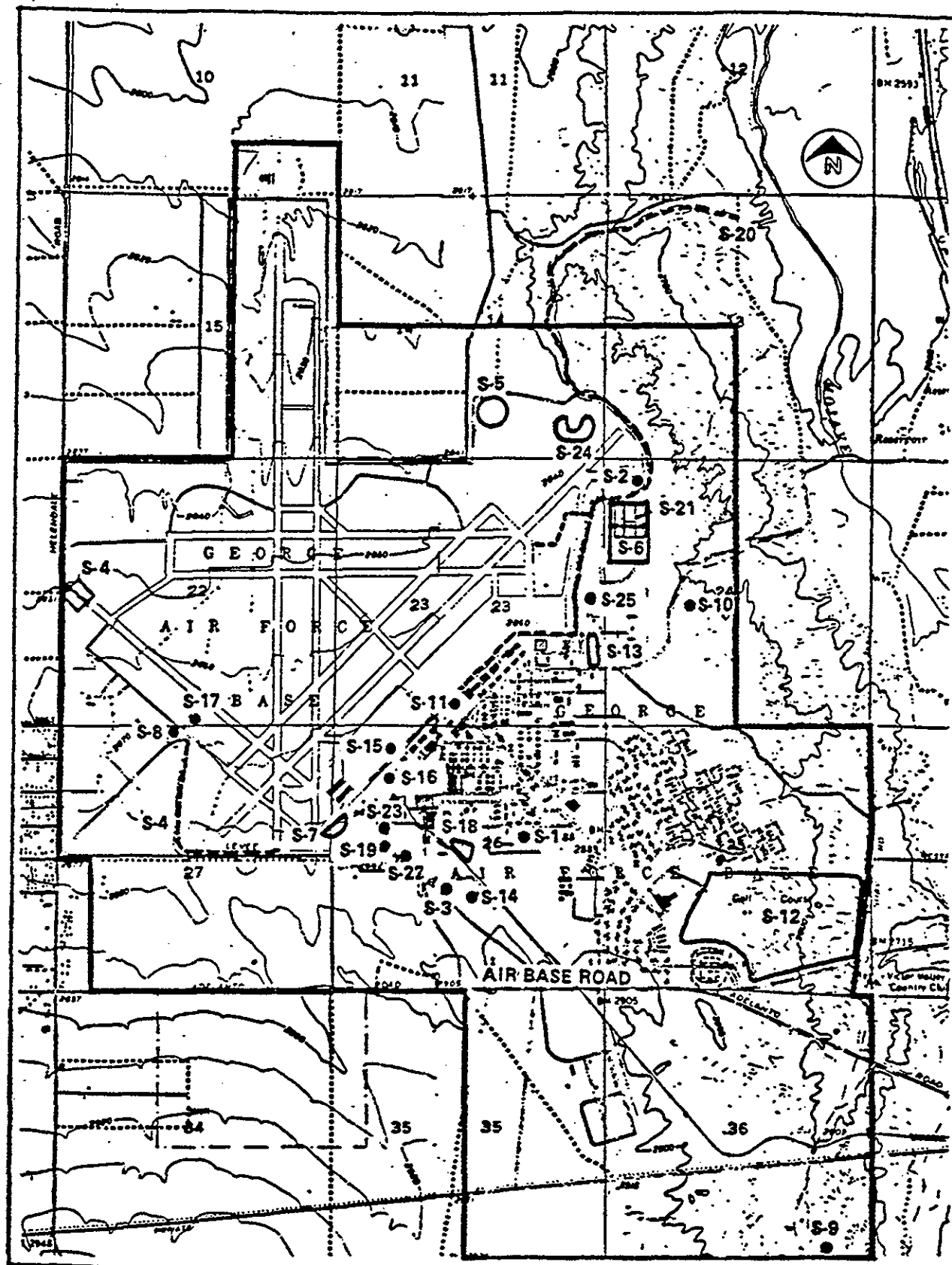


FIGURE 11
 GEORGE AFB LIQUID DISPOSAL OR
 SPILL AREAS
 S-1 THROUGH S-25

ATTACHMENT B
CHEMICALS OF CONCERN

Chemicals of Concern

TOXICITY OF SUBSTANCES FOUND AT GEORGE AIR FORCE BASE

This description of the potential toxicity of chemicals of concern at George AFB is for reference only and should not be interpreted as describing effects on any individual person.

This list represents chemicals of concern thought at the time of this Agreement, as the Remedial Investigation continues the list may change.

Benzene

Acute: Moderately toxic by ingestion and inhalation of vapors, narcotic, irritates eyes and mucous membranes, Central Nervous System (CNS) depression, headache, leg muscle weakness, dizziness. Prolonged exposure can cause nausea, convulsions, coma, and respiratory failure causing death.

Chronic: Exposure may cause suppression of blood cells, leukopenia (reproduction of leukocytes), anemia, thrombocytopenia (decrease in blood platelet; EPA listed carcinogen.

Chloroform

Acute: Large dose inhalation can cause hypotension, respiratory and myocardial depression, lassitude, digestive disturbance, dizziness, hallucinations, drowsiness, muscular incoordination, and mental dullness. Prolonged inhalation can cause coma, cardiac respiratory failure and death.

Chronic: EPA listed carcinogen; Has caused enlargement of liver and kidney damage.

Copper

Acute: Oxide fumes can cause metal fume fever, upper respiratory tract irritation; Ingestion may cause nausea, vomiting, skin discoloration

Chronic: hemolysis, fibrosis and cirrhosis of the liver, CNS damage and kidney disfunction

Chromium

Acute: Exposure can cause coughing, wheezing, headache, dyspnea, pain on deep inspiration.

Chronic: Lachrymation, inflammation of the conjunctiva, fever, weight loss, nasal itch and soreness, epistaxis, ulceration that could result in perforation of nasal septum, congested nasal mucosa, chronic asthmatic bronchitis, dermatitis, ulceration of the skin, inflammation of laryngeal mucosa, cutaneous discoloration, and dental corrosion may occur. Oxides of chromium can cause tumors and CNS depression.

Lead

Acute: Headache, aching bones and muscles, digestive system and abdominal pains. If exposure is continued, vomiting, malaise, and convulsions may occur; permanent brain damage, and reversible kidney damage may also occur.

Chronic: Suspected teratogen, vascular sclerosis, tubal cell atrophy, and intestinal fibrosis may occur after excess chronic exposure. Anemia, pallor, decreased hand grip, fatigue, sleep disturbance, decreased appetite, abdominal cramping, nausea, vomiting, and learning deficiencies have been observed.

Methylethylketone (MEK, 2-Butanone)

Acute: Irritation of mucous membranes, eyes, and nose, headaches, dizziness, vomiting can occur.

Chronic: CNS effects, lungs, liver and neurological impairment and disfunction.

Tetraethyllead

See Lead above.

Toluene

Acute: Mildly toxic by inhalation; irritation to eyes, respiratory tract, and skin, tachycardia and recoverable respiratory paralysis, coma can occur.

Chronic: Exposure in the range of 200-500 ppm can cause, dizziness, fatigue, muscular weakness, drowsiness, incoordination with staggering gait, skin parathesis, prolonged inhalation may cause, anemia, collapse, coma, leucopenia, and bone marrow effects.

Trichloroethylene (TCE)

Acute: Mildly toxic by inhalation and ingestion, eye and skin irritant, narcotic, and CNS depressant, dizziness, incoordination, drowsiness, increased reaction time may occur. Severe acute exposure can cause ventricular fibrillation, and cardiac failure.

Chronic: The possibility of liver damage and cirrhosis exists in addition to depression of CNS.

Zinc

Acute: Contaminants in and oxides of zinc may cause metal fume fever, chills, fever, profuse sweating, muscular weakness, nausea, diarrhea when inhaled or ingested in very large quantities.

Chronic: Might cause CNS depression.

Sources:

- 1.) "Handbook of Toxic and Hazardous Chemicals and Carcinogens," Sittig, 1985.
- 2.) "The Merck Index Eleventh Edition" Martha Windholz, ED. 1989
- 3.) "Dangerous Properties of Industrial Materials Seventh Edition" Irving Sax 1988

ATTACHMENT C

STATEMENT OF FACTS & SUMMARY OF IRP ACTIVITIES

ATTACHMENT C

STATEMENT OF FACTS & SUMMARY OF IRP ACTIVITIES

For the purposes of this Agreement, the following constitutes a summary of the facts upon which this Agreement is based. None of the facts related herein shall be considered admissions by any Party, nor shall they be used by any person for purposes unrelated to this Agreement.

The Parties have determined that:

1. George AFB is located between the cities of Adelanto and Victorville in the Mojave Desert Region, San Bernardino County, California. It was established in 1943 to conduct tactical fighter operations and provide training for aircraft and maintenance personnel. George AFB comprises approximately 5,347 acres.
2. Past industrial operations, primarily maintenance of aircraft and ground support equipment, fire protection training, corrosion control and fuels management, has resulted in the disposal of solvents, petroleum products, and other solid wastes in various landfills on base. Since the mid 1970s, all land disposal of hazardous and petroleum wastes has ceased. Such wastes since then have been collected for disposal at permitted off-base disposal facilities or for reclamation and reuse. The base has a RCRA interim status hazardous waste storage facility and has applied for a RCRA Part B Storage permit. All sanitary waste disposal is handled by a local San Bernardino County Landfill.
3. In addition to these waste management activities, fuel wastes were burned during training exercises in two fire training areas, one used until 1970 and the other in use from that date to the present. Percolation ponds and sludge drying beds were maintained in conjunction with the operation of a wastewater treatment plant until 1980, when all base sanitary and industrial wastewaters were connected to the Victor Valley Wastewater Reclamation Authority. A storm drain system along the flight line received industrial discharges and storm water runoff from industrial and aircraft operations.
4. Hospital wastes, consisting mostly of syringes, vials, and rags, were disposed of near the fire training pit. A number of fuel and solvent spills and leaks occurred on base.
5. George AFB lies within the upper Mojave River Valley groundwater basin. The groundwater basin under and in the vicinity of George AFB consists of two primary water bearing units, termed the upper aquifer (above El, 2600 feet) and the regional (lower) aquifer (below El, 2600 feet). The older, lower aquifer exists within partially confined, moderately permeable deposits. The upper aquifer recharges to the regional aquifer. Groundwater flows in a north-northeast direction. Both the groundwater and surface water drain into the Mojave River.

6. As part of the Department of Defense's Installation Restoration Program (IRP), the Air Force has undertaken several studies beginning in January 1982 to determine the existence, nature, and extent of any contamination at George AFB. The reports and the dates of publication are listed in this Attachment.

7. The IRP Phase I Records Search, 1982, identified 10 waste disposal sites in the Northeast Disposal Area, consisting of burial sites, landfills, fire training areas, and spill or liquid disposal sites, which could contain wastes with potentially hazardous characteristics. Additionally, an industrial and stormwater sewer from the flight line, another potential source of contamination, runs through the area. As part of the Phase II Confirmation/Quantification Study, 1986, the Air Force installed and sampled 44 monitoring wells in the area, in order to determine the nature and extent of any groundwater contamination. Trichloroethylene (TCE) contamination was wide-spread, being detected at least once in 42 of the 44 wells, with 12 wells showing TCE concentrations above the California State Action Level of 5 ug/l. In addition to TCE, benzene and 1,2-dichloroethane were detected in a few wells at levels exceeding drinking water standards. Other volatile organic compounds (VOCs) and benzene were detected at concentrations below State Action Levels. The TCE contamination above the action level is essentially confined to the Upper Aquifer and extends approximately 4200 feet north of the installation boundary.

8. On 16 January 1986, the California Regional Water Quality Control Board, Lahonton Region, issued Cleanup and Abatement Order (CAO) No. 86-3, since revised to CAO No. 86-23, which directed the Air Force to clean up and abate the ground-water TCE contamination in the Northeast Disposal Area. On 14 July 1989, the United States Environmental Protection Agency (EPA) proposed to list George AFB on the National Priorities List (NPL), due to groundwater contamination from the Northeast Disposal Area (54 Federal Register 29820). This listing on the NPL became final on 12 February 1990 (55 Federal Register 6154-6174).

9. As the result of a Phase IV Feasibility Study, the Air Force has designed an upper aquifer remediation project for groundwater contamination from the Northeast Disposal Area, which would extract contaminated groundwater from both on-base and off-base wells, remove the TCE and other volatile organics by use of air stripping towers, and recharge the treated water through the existing percolation ponds. The Air Force has also removed perforated section of the Industrial Storm (Site S-20) drain along the flight line, which runs through the Northeast Disposal Area, in early 1990. Additional sections of S-20 will be jet-cleaned by FY 1991 to remove sludges contaminated with low levels of lead.

10. The following tables summarize the Installation Restoration Program activities that have been performed at George AFB.

Table 3.11-3. Waste sites and disposal area investigations

Page 1 of 3

Site	Site Description/Name	Location and Waste Description	Reference
Munitions			
M-1	Munitions	East of existing grenade range near abandoned small arms range. 20 mm cartridges and grenade debris. Concrete-lined burn pit with paint cans. Unverified TNT & nitroglycerine burial near the burn pit.	CH2M-p38
M-2	Munitions/oil	North of TEL disposal site, south of Air Base Road. Trench (225'x60'x10') with small arms munitions residues. Auto hobby shop waste oils possible also.	CH2M-p41
M-3	Munitions/bombs	Burial area 50' by 50', south of abandoned small arms range. Burned practice bombs and small arms cartridges.	CH2M-p41
Landfills			
L-1	Base Landfill	South of Air Base Road adjacent to abandoned small arms range. Lube oil, paint, laquer, naphthalene, PD-680, TCE, cleaning compounds, hydraulic fluid, firefighting foam, batteries, oil spill absorbent, and general refuse disposal. Unverified barrels of acetone in southeast corner. Waste oil and fuel were used to burn materials in landfill.	CH2M-p42
L-2	TEL Disposal	Within west boundary of L-1. Bottoms from leaded, JP-4 fuel tanks and leaded fuel tank sludge. Possible trench (200'x15'x20') for JP-4 tank sludge in 1966.	CH2M-p42
L-3	Radioactive Disposal	Directly west of site L-2. Unverified low-level radioactive wastes (vacuum tubes). Possible toxic chemicals.	CH2M-p43
L-4	Landfill-cartridges	South of site L-3. Jet engine starter cartridges.	CH2M-p43
L-5	Landfill-paper	Southwest of site L-1. Privacy Act landfill with unburned paper.	CH2M-p44
L-6	Wood/Debris Disposal	South of Perimeter Road, northwest of existing skeet range. Wooden timbers and other debris. Possible barracks demolition (asbestos and fiberglass)	CH2M-p44
L-7	Const Debris/Borrow Pit	South of Perimeter Road in line with southwest end of Runway 21. Borrow pit filled with construction debris (pavement, rock)	CH2M-p44
L-8	Road Materials Burial	West of Perimeter Road and the southwest end of Runway 21. Concrete, asphalt and rubble. Unverified disposal of aircraft parts and trash in 1940's.	CH2M-p44
L-9	Trash Disposal	East of Bldg 806, north of L-8. Miscellaneous trash disposal.	CH2M-p45
L-10	Const Debris/Trash	Under northern and eastern parts of residential area. Construction debris and rubble. Trash dumping and burning in 1950's, debris removal in 1970's.	CH2M-p45
L-11	Street Sweepings	North of the residential area. Street sweepings. Possible trash and rubble 1960's, 1970's. All base waste from 1953 to 1957, like wastes at L-1, with possible burying using waste oil in 1950's.	CH2M-p45
L-12	Original base Landfill	Under Bldg 761 (alert hangar) and apron. Non-salvageable materials (tools, POL, jeeps, scooters, war supplies after 1946). Incinerated ash from all base trash burning prior to 1950. Miscellaneous dumping and burying until 1950's.	CH2M-p46
L-13	Base Landfill/Fuel	East of the alert barn. Minimal fuel disposal. All base wastes after L-1 closure in +/- 1970. No burning.	CH2M-p46

Table 3.11-3. Waste sites and disposal area investigations (cont'd)

Page 2 of 3

Site	Site Description/Name	Location and Waste Description	Reference
Other Dumps			
B-1	Chemical Toilet sludge	Southeast of abandoned small arms range. Chemical toilet sludge.	CH2M-p46
B-2	Paint Drum Burial	East of existing skeet range, adjacent to Air Base Road. 400 gallons of leaded paint in 1952.	CH2M-p47
B-3	Riprap for Indust Drain Discharge Gul	Along the Industrial drain discharge gully. Riprap materials from small empty cans and construction rubble.	CH2M-p47
B-4	Riprap for off-base water supply	At the off-base water supply wells 5, 6, 7. Riprap materials from small empty cans and construction rubble.	CH2M-p47
B-5	Rubble Disposal	Northeast of alert barn and north of site L-13. Small rubble.	CH2M-p47
B-6	Misc Trash/Rubble Disposal	East of STP percolation ponds, adjacent to base boundary. Misc. domestic trash and rubble in small area.	CH2M-p47
B-7	Construction Demolition	Northeast of northeast end of Runway 03. Small construction demolition disposal area.	CH2M-p48
B-8	Pesticide and Paint Burial	East of alert hangar and southeast of B-5. Unverified DDT, Copper sulfate, leaded paint.	CH2M-p48
B-9	Acid and Oil Burial	North of northeast end of Runway 03. Unverified HCl, H ₂ SO ₄ , oil, fuel and unidentified drum burial.	CH2M-p48
B-10	Pesticide and Oil Burial	Northeast of northeast end of Runway 03. Unverified pesticides and oil drums.	CH2M-p48
B-11	F-111 Aircraft Burial	Southeast of STP percolation ponds. An F-111 aircraft burial.	CH2M-p49
B-12	Aircraft Parts Burial	Northwest of Bldg. 540 possibly in old salvage yard area. Miscellaneous airplane parts.	CH2M-p49
B-13	Salvage Yard	East of Bldg 539 to Bldg. 540. The salvage yard since 1950. Possibly munitions burial.	CH2M-p49
B-A	Aircraft crash residue.	10 events over a widespread area. Aircraft parts	CH2M-p49
B-B	Earth embankment for firing in	Abandoned runway. Spent firearms and munition waste.	CH2M-p49
Liquid Disposal or Spills			
S-1	POL Leach Field	Near Bldg 589. Leach field-waste POL (trucks).	CH2M-p50
S-2	Leach Field	Near alert hangar. Leach field-sanitary wastes, aircraft maint.	CH2M-p50
S-3	POL Leach Field	Near Bldg 552 & 551. Leach field-waste POL (vehicles), fuels lab.	CH2M-p50
S-4	Fuel and Oil Disposal	On perimeter road near engine test cells, off northwest end of abandoned runway. Waste jet fuel dumped on surface from bowzers.	CH2M-p51
S-5	Fire Training Area	At existing fire training area. Burnt waste oils and fuels.	CH2M-p51
S-6	Abandoned Fire Training	South of and possibly to under the STP Percolation ponds. Abandoned fire training area with burnt waste oil and fuel. DPDO storage yard with oil, asphalt and palliative spills.	CH2M-p51
S-7	Tip Tank Drainage Area	South of Bldg 685, next to apron. Wing tip fuel drainage area.	CH2M-p51
S-8	Test Cell 799	Near engine test cell 799. Periodic jet fuel spills.	CH2M-p52
S-9	Creosote Spill Area	Near munitions disposal area south of abandoned small arms range. Possible creasote spills.	CH2M-p52
S-10	Jet Fuel Spill	East of missile maintenance area. Jet fuel spill-quantity unknown.	CH2M-p52
S-11	Bldg 708 Pipeline Leak	Near Bldg 708. Jet fuel pipeline leak-quantity unknown.	CH2M-p52
S-12	Golf Course	At golf course. STP percolation pond effluent.	CH2M-p53

Table 3.11-3. Waste sites and disposal area investigations (cont'd)

Page 3 of 3

Site	Site Description/Name	Location and Waste Description	Reference
S-13	Fuel Spill Collection Point	Near intersection of Phantom, Desert Streets. Accumulation point for jet fuel accidentally discharged in 1980.	CH2M-p53
S-14	Bldg 690 Pipeline Leak	Near POL bulk fuel storage at Bldg 549. Possible 36000 gallon jet fuel pipeline leak. (Est. <1000 gal.)	CH2M-p54
S-15	Faulty Construction Leak	Southwest end of operational apron. Jet fuel leaks at hydrants.	CH2M-p54
S-16	Bldg 690 Gasoline Spill	Near Bldg 690. Leaded gasoline spills prior to mid-1950's.	CH2M-p54
S-17	Bldg 819 Fuel Spill	Near engine test cell 819. 8000 gallon jet fuel spill in 1950's.	CH2M-p54
S-18	Salvage Yard Liquids Spill	At salvage yard. Small spills of solvents, waste oils, other liquids.	CH2M-p55
S-19	Bldg 560 (Transformer Storage)	Near Bldg 560. Temporary storage area-unserviceable transformers Minor leaks of oils from transformers.	CH2M-p55
S-20	Industrial Outfall and Pipeline	At northeast corner of the base. Industrial/stormwater outfall gully with waste oils, fuels, solvents, paint strippers. STP percolation ponds located here in 1940's.	CH2M-p55
S-21	STP Percolation Ponds	South of alert hangar. STP percolation ponds for sanitary wastes. Waste oils and solvents enter sanitary system. Abandoned fire training area may underlie ponds.	CH2M-p56
S-22	French Drain	Next to Bldg 555. Brick-lined drywell (30'x4'diameter) for equipment POL disposal.	CH2M-p56
S-23	French Drain	Next to Bldg 559. Abandoned drain pit/drywell-jet fuel disposal.	CH2M-p56
S-24	Sewerage Sludge Disposal	Along industrial discharge gully north of runway. Sewage sludge.	CH2M-p56
S-25	Sludge Drying Beds	Next to STP. Sludge drying beds for sanitary and industrial primary sludges from residential and shop discharges to sewer.	CH2M-p57
S-A	Shop Waste	Undocumented locations. Misc. shop wastes including TCE.	CH2M-p57
S-B	Rinse Water	Undocumented locations. Pesticide containers rinse water.	CH2M-p57
S-C	Sewage Sludge	Perimeter Road and undocumented locations. Sewer sludge.	CH2M-p57
S-D	Transformer Malfunction Sites	Various (<10) transformers. Small amounts of transformer oil.	CH2M-p57
S-E	Outlying Revelments	Possibly all outlying revelments. Miscellaneous spills.	CH2M-p57
Other On-base Sites			
NPSR	Non Point Source Residential Housing	Central east part of base in housing area. Roadway and surface runoff from area.	SAIC2-p4-128 Fig.4-39
LFDS	Liquid Fuel Distribution System	About 25000' of 8", 10" steel pipe from the operational apron south to and terminating at S-14.	SAIC2-p4-153 Fig.4-48

References: CH2M - CH2M Hill (1982); SAIC2 - SAIC (1987)

Table 3.11-4. Identified sites not requiring a HARM score.

			REFERENCE AND REPORT YEAR FOR ACTIVITY			
			CH2M 1982	SAIC 1 1985	SAIC 2 1987	JMM 1988
SITE	SITE DESCRIPTION	WASTE TYPE	TYPES OF SITE ACTIVITIES			
Munitions						
M-1	Munitions	Small Arms Residue	D			
M-3	Munitions/bombs	Small Arms Residue/Bombs	D			
Landfills						
L-4	Landfill-cartridges	Starter Cartridges	D	SS,GS,G,D	GS,SS	GS,G
L-5	Landfill-paper	Paper	D		GS,SS	GS,G
L-6	Wood/Debris Disposal	Debris/Possible Asbestos	D			
L-7	Const Debris/Borrow Pit	Construction Debris	D			
L-8	Road Materials Burial	Construction Debris	D			
L-9	Trash Disposal	Domestic	D			
L-10	Const Debris/Trash	Debris/Domestic	D			
Other Dumps						
B-1	Chem. Toilet sludge	Chemical Toilet Residue	D			
B-3	Riprap for Indust Drain Dischar	Debris/Industrial	D			
B-4	Riprap for off-base water suppl	Debris/Industrial	D			
B-5	Rubble Disposal	Rubble	D			
B-6	Misc Trash/Rubble Disposal	Rubble/Domestic	D			
B-7	Construction Demolition	Construction Debris	D			
B-11	F-111 Aircraft Burial	Aircraft	D			
B-12	Aircraft Parts Burial	Aircraft Parts	D			
B-13	Salvage Yard	Possible Munitions	D			
Liquid Disposal or Spills						
S-2	Leach Field	Sanitary	D			
S-8	Test Cell 799	Jet Fuel	D			
S-9	Creosote Spill Area	Creosote	D			
S-10	Jet Fuel Spill	Jet Fuel	D			
S-11	Bldg 708 Pipeline Leak	Jet Fuel	D			
S-13	Fuel Spill Collection Point	Jet Fuel	D			
S-14	Bldg 690 Pipeline Leak	Jet Fuel	D			
S-15	Faulty Construction Leak	Jet Fuel	D			
S-16	Bldg 690 Gasoline Spill	Leaded Gas	D			
S-17	Bldg 819 Fuel Spill	Jet Fuel	D			
S-18	Salvage Yard Liquids Spill	Solvents/Oils	D		SS	SS,F
S-19	Bldg 560 Unservic. Transformers Stor	Transformer Oils	D	SS,GS,D,F	SS	
S-24	Sewerage Sludge Disposal	Sanitary/Industrial Sludge	D		SS,GS	
Other Sites						
	Non Point Source Residential Housing				SS	
	Liquid Fuel Distribution System				SS	
Footnotes:						
All sites except 'Other Sites' from CH2M-Hill, 1982.			Other Sites from SAIC, 1987.		No sites had 'HARM'	
D: Document Search, Field Visit			G: Geophysical Investigation		SS: Soil Sampling	
F: Field Work (Measuring)			C: Compliance with Regulations		GS: Groundwater Sampling	
REFERENCES: CH2M - CH2M Hill (1982); SAIC1 - SAIC (1985); SAIC2 - SAIC (1987); JMM - JMM (1988)						

Table 3.11-5.

SITE	SITE DESCRIPTION	WASTE TYPE
Munitions		
M-2	Munitions/oil	Small Arms Residue/Oil
Landfills		
L-1	Base Landfill	Industrial/Domestic
L-2	TEL Disposal	Fuel Tank Sludge
L-3	Radioactive Disposal	Radioactive/Toxic
L-11	Street Sweepings	Debris/Domestic/Industrial
L-12	Original base Landfill	Industrial/Domestic
L-13	Base Landfill/Fuel	Industrial/Domestic
Other Dumps		
B-2	Paint Drum Burial	Paint
B-8	Pesticide and Paint Burial	Pesticides/Paint
B-9	Acid and Oil Burial	Acids/Oils
B-10	Pesticide and Oil Burial	Pesticides/Oils
Liquid Disposal or Spills		
S-1	POL Leach Field	POL
S-3	POL Leach Field	POL
S-4	Fuel and Oil Disposal	Jet Fuel
S-5	Fire Training Area	POL
S-6	Abandoned Fire Training	POL
S-7	Tip Tank Drainage Area	Jet Fuel
S-12	Golf Course/WWTP Irrigation	Treated Effluent
S-20	Industrial Outfall and Pipeline	Industrial
S-21	STP Percolation Ponds	Sanitary/Industrial
S-22	French Drain	POL
S-23	French Drain	Jet Fuel
S-25	Sludge Drying Beds	Sanitary/Industrial Sludge
REFERENCE: CH2M Hill (1982, p12)		

Table 3.11-6. Sites at which follow-up work has been done since 1982.

				REFERENCE & REPORT YEAR FOR ACTIVITY			
SITE	SITE DESCRIPTION	WASTE TYPE		CH2M 1982	SAIC 1 1985	SAIC 2 1987	JMM 1988
				TYPES OF SITE ACTIVITIES			
Munitions							
M-2	Munitions/oil	Small Arms Residue/Oil		D	SS,GS,F,D,G	GS,SS	GS,G
Landfills							
L-1	Base Landfill	Industrial/Domestic		D	SS,GS,G,D	GS,SS	GS,G
L-2	TEL Disposal	Fuel Tank Sludge		D	SS,GS,G,D	GS,SS	GS,G
L-3	Radioactive Disposal	Radioactive/Toxic		D,F	SS,GS,G,D	GS,SS	GS,G
L-4	Landfill-cartridges	Starter Cartridges		D	SS,GS,G,D	GS,SS	GS,G
L-5	Landfill-paper	Paper		D		GS,SS	GS,G
L-11	Street Sweepings	Debris/Domestic/Industrial		D	SS,GS,D,F	GS,SS	
L-12	Original base Landfill	Industrial/Domestic		D	SS,GS,D,F	GS,SS	
L-13	Base Landfill/Fuel	Industrial/Domestic		D	SS,GS,D,F	GS,SS	
Other Dumps							
B-2	Paint Drum Burial	Paint		D		SS	
B-8	Pesticide and Paint Burial	Pesticides/Paint		D	SS,GS,D,F	SS,GS	
B-9	Acid and Oil Burial	Acids/Oils		D	SS,GS,D,F	SS,GS	
B-10	Pesticide and Oil Burial	Pesticides/Oils		D	SS,GS,D,F	SS,GS	
Liquid Disposal/or Spills							
S-1	POL Leach Field	POL		D		SS	
S-3	POL Leach Field	POL		D		SS	SS
S-4	Fuel and Oil Disposal	Jet Fuel		D	SS,D	SS	
S-5	Fire Training Area	POL		D		SS,GS	SS,GS,F
S-6	Abandoned Fire Training	POL		D	SS,GS,D,F	SS,GS	
S-7	Tip Tank Drainage Area	Jet Fuel		D		SS	
S-18	Salvage Yard Liquids Spill	Solvents/Oils		D		SS	SS,F
S-19	Bldg 560 Unservic. Transformer	Transformer Oils		D	SS,GS,D,F	SS	
S-20	Industrial Outfall and Pipeline	Industrial		D	SS,GS,F,D	SS,GS,F	D,C
S-21	STP Percolation Ponds	Sanitary/Industrial		D		SS,GS	SS,GS
S-22	French Drain	POL		D	SS,GS,D,F	GS,SS	GS
S-23	French Drain	Jet Fuel		D	SS,GS,D,F	SS,GS	
S-24	Sewerage Sludge Disposal	Sanitary/Industrial Sludge		D		SS,GS	
S-25	Sludge Drying Beds	Sanitary/Industrial Sludge		D	SS,GS,D,F	SS	
Other Sites							
	Non Point Source Residential Housing					SS	
	Liquid Fuel Distribution System					SS	
Footnotes:							
D: Document Search, Field Visit		G: Geophysical Investigation		SS: Soil Sampling			
F: Field Work (Measuring)		C: Compliance with Regulations		GS: Groundwater Sampling			

Table 3.11-7. SOUTHEAST DISPOSAL AREA ACTIVITIES

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ID #	SITE NAME/DESCRIPTION	WASTE DESCRIPTION	REF.	CH2M 1982	SAIC 1 1985	SAIC 2 1987	JMM 1988
M-2	Munitions/oil	North of TEL disposal site, south of Air Base Road. Trench (225'x60'x10') with small arms munitions residues. Auto hobby shop waste oils possible also.	CH2M-p41	D	SS,GS,F,D,G	GS,SS	GS,G
L-1	Base Landfill	South of Air Base Road adjacent to abandoned small arms range. Lube oil, paint, lacquer, naphthalene, PD-680, TCE, cleaning compounds, hydraulic fluid, firefighting foam, batteries, oil spill absorbent, and general refuse disposal. Unverified barrels of acetone in southeast corner. Waste oil and fuel were used to burn materials in landfill.	CH2M-p42	D	SS,GS,G,D	GS,SS	GS,G
L-2	TEL Disposal	Within west boundary of L-1. Bottoms from leaded, JP-4 fuel tanks and leaded fuel tank sludge. Possible trench (200'x15'x20') for JP-4 tank sludge in 1966.	CH2M-p42	D	SS,GS,G,D	GS,SS	GS,G
L-3	Radioactive Disposal	Directly west of site L-2. Unverified low-level radioactive wastes (vacuum tubes). Possible toxic chemicals.	CH2M-p43	D,F	SS,GS,G,D	GS,SS	GS,G
L-4	Landfill-cartridges	South of site L-3. Jet engine starter cartridges.	CH2M-p43	D	SS,GS,G,D	GS,SS	GS,G
L-5	Landfill-paper	Southwest of site L-1. Privacy Act landfill with unburned paper.	CH2M-p44	D		GS,SS	GS,G
YEAR	ACTIVITY DESCRIPTION	REPORTED CHARACTERIZATION RESULTS	REF.	SUMMARY OF FINDINGS			
1984	Site inspection.		SAIC, 1985	Over 40 disposal trenches, 30 with metal wastes. Measurable chlorinated organics in groundwater, with highest concentration gradient near TEL (L-3) site. Elevated heavy metals in groundwater.			
	Magnetometer survey.	Landfill trenches, 200' x 100' area, 10-250' trenches, 15-burial sites, engine starter cartridges, possible drum disposal area.	p47				
	4 monitoring wells, each sampled. (SZ01, SZ02, SZ03, SZ04)	Oil & grease to 14 mg/l, Chromium, lead and silver to 0.1, 0.07, 0.005 mg/l, halogenated hydrocarbons to 1.1 mg/l.	p56				
	4 boreholes, 3 soil samples from SZ02.	Oil & grease to 100 mg/kg, Chromium & lead to 34, 8 mg/kg.	p77				
	Water Level measurements.	Assisted in shallow water table definition.	p51				
1986	Ground penetrating radar failed.		SAIC, 1987	All soils meet federal and state TTLC, TCLP, STLC limits. Radiation levels detected in all of area suggest perched groundwater not suitable for consumption. However, radiation may have natural causes.			
	Added 1 borehole (SZ05), took 7 soil samples.	Bis(2-ethylhexyl)phthalate to 0.61 mg/l, chromium, lead & zinc to 25, 5, 70 mg/kg. Acetone not present.	p4-4,4-132				
	Added 1 monitoring well, sampled all 5, three times (15 samples).	Benzene to 8 ug/l in 3 wells, with SZ01 above MCL of 5 ug/l. Methylene chloride, TCE measured but below CA ALs of 40, 5 ug/l. Gross alpha in 3 wells to 24 pCi/l above state DWS of 0.4 pCi/l. Beta levels in 3 wells to 21 pCi/l above federal level of 1 pCi/l. No acetone detected.	p4-74,77 p4-132				
1987	Groundwater sampling of 5 wells.	Gross alpha, beta, total uranium levels to 8, 19, 5 pCi/l. No benzene or heavy metals detected this round.	JMM, 1988 p4-11	Radiation levels likely due to natural environment. No other evidence of groundwater contamination.			
D: Document Search, Field Visit G: Geophysical Investigation SS: Soil Sampling F: Field Work (Measuring) C: Compliance with Regulations GS: Groundwater Sampling							
REFERENCES: CH2M-CH2M Hill(1982); SAIC 1-SAIC, 1985; SAIC 2-SAIC, 1987; JMM-MONTGOMERY, 1988.							

Table 3.11-8. CENTRAL DISPOSAL AREA ACTIVITIES

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ID #	SITE NAME/DESCRIPTION	WASTE DESCRIPTION	REF.	CH2M 1982	SAIC 1 1985	SAIC 2 1987	JMM 1988
B-2	Paint Drum Burial	East of existing ekeet range, adjacent to Air Base Road.	CH2M-p47	D		88	
B-1	POL Leach Field	400 gallons of leaded paint in 1952 Near Bldg 686, Leach field-waste POL (trucks).	CH2M-p50	D		88	
S-3	POL Leach Field	Near Bldg 682 & 681, Leach field-waste POL (vehicles), fuels lab.	CH2M-p50	D		88	88
S-7	Tip Tank Drainage Area	South of Bldg 686, next to apron, Wing tip fuel drainage area.	CH2M-p51	D		88	
S-18	Salvage Yard Liquids Spill	At salvage yard. Small spills of solvents, waste oils, other liquids.	CH2M-p55	D		88	88,F
S-19	Bldg 600 (Transformer Storage)	Near Bldg 600, Temporary storage area-unservicable transformers. Minor leaks of oils from transformers.	CH2M-p55	D	88,GS,D,F	88	
S-22	French Drain	Next to Bldg 655 Brick-lined drywell (30"x4' diameter) for equipment POL disposal.	CH2M-p56	D	88,GS,D,F	GS,88	GS
S-23	French Drain	Next to Bldg 659, Abandoned drain pit/drywell-for fuel disposal.	CH2M-p56	D	88,GS,D,F		
YEAR	ACTIVITY DESCRIPTION	REPORTED CHARACTERIZATION RESULTS	REF.	SUMMARY OF FINDINGS			
1984	Central Disposal Area: 1 monitoring well, CZ01, sampled, 1 borehole, 3 soil samples. Water level measurements.	Oil & grease, TOC to 1.3, 8 mg/l near known fuel disposal dry well. Oil and grease to 100 mg/kg in soils at depth. Water levels assisted determine flow gradient.	SAIC, 1985 p56,63, 77-8,82	No PCB's in soils or groundwater. Oil & grease high. Needs further characterization.			
1986	B-2: 6 soil borings; 7 backhoe pits	No paint waste debris; lead to 7.8 mg/kg at 0-2.5' sample. Less than TTL.	SAIC, 1987 p4-152-3	Lead in surface soils may result from auto emissions, surface runoff. Even if solubilized, lead concentration would be under CA STLC.			
	S-1: 6-8' soil borings	No purgeable halocarbons or purgeable aromatics; petroleum hydrocarbons to 140 mg/kg at the ground surface.	p4-142-6	Source of contaminants unknown; hydrocarbons will continue to degrade.			
	S-3: 6-8' soil borings plus follow-up grid adjacent to PL12.	Petroleum hydrocarbons fairly localized in vicinity. Depths from surface to 6' with heavy oils to 8300 mg/kg TRPH, ethylbenzene.	p4-146-8	Localized contamination of soil with oil at depth below 4 feet with ethylbenzene.			
	S-7: 5-8' soil borings	No VOCs. Petroleum hydrocarbons to 140 mg/kg.	p4-139-142	Source may be old liquid fuel disposal, or atmospheric fallout. Volatilization & degradation processes working to reduce environmental effects.			
	S-18: 8-3' soils borings in hazardous waste materials storage yard.	No VOC's, PCB's or pesticides. Nine metals from EPA priority pollutant list had levels of significance, but below limits.	p4-147-162	Arsenic, lead and zinc enrichment in surface soils with potential migration.			
	S-19: 4-10' soil borings and analysis near old transformer storage area.	No measurable PCB's in any of the soil samples.	p6-1	No PCB contamination of soil or groundwater. (Note: groundwater sample may not be representative of S19.)			
	S22: added monitoring well (CZ02). Sampled/measured CZ01, CZ02 3 times. 9 soil samples from CZ02 analyzed.	TCE, chloroform detected at levels below DWS, TTL, STLC levels. Soils had detectable Cr, Pb, Zn, but all below limits. TOC to 6 mg/l.	p4-77,1-7,8 p4-135,138- p4-139,8-1	S-22: No soil or groundwater contamination of concern.			
	S-23: site (French Drain) not found.	No field activity at this waste area.	p4-135	No evaluation possible.			

Table 3.11-8. CENTRAL DISPOSAL AREA ACTIVITIES

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1987	S-3 : 4-20' soils borings/24 samples.	Localized VOC's and TRPH in 2 of the borings to total depth of 20'.	JMM, 1988 p4-2,3 p5-3, 7-1	TRPHs are the major soil contaminant and n-hexane has highest groundwater contamination potential. Remove high TRPH soils.
	S-18: 4-25' soils borings/24 samples.	Similar results as SAIC, 1987, except lower lead, added selenium, and no Cd or Hg detected. Low levels of BNAs in S18-B4.	p4-7,8 p5-4, 7-3	Chromium, copper prevalent. Lead is toxic. Metals have generally low mobility. No further action.
	S-22: CZ02 well sampled	No TCE and low TRPH and zinc levels. Toluene as an artifact.	p4-10,6-5,7-3	No risk through groundwater exposure. No further action.
D: Document Search, Field Visit G: Geophysical Investigation SS: Soil Sampling F: Field Work (Measuring) C: Compliance with Regulations GS: Groundwater Sampling				
REFERENCES: CH2M-CH2M HW(1987); SAIC 1-SAIC, 1988; SAIC 2-SAIC, 1987; JMM-MONTGOMERY, 1988.				

Table 3.11-9. WEST PERIMETER DISPOSAL AREA ACTIVITIES

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ID #	SITE NAME/DESCRIPTION	WASTE DESCRIPTION	REF.	CH2M 1982	SAIC 1 1985	SAIC 2 1987	JMM 1988
8-4	Fuel and Oil Disposal	On perimeter road near engine test cells, off northwest end of abandoned runway. Waste jet fuel dumped on surface from bowzers.	CH2M-p51	D	SS,D	SS	
YEAR	ACTIVITY DESCRIPTION	REPORTED CHARACTERIZATION RESULTS	REF.	SUMMARY OF FINDINGS			
1984	Site inspection and 2-6" soil samples (PR01,PR02).	Measurable oil & grease on road surface; concentrations close to background levels.	SAIC, 1985 p59,77-8, 92-3	Suspected contamination; recommend further sampling.			
1986	2-1" soil borings (PR03-PR10); 1 sample each.	No VOCs or BNAs detected; Cr,Pb,Zn to 15,7,36 mg/kg.	SAIC, 1987 p4-132-135	Metals in soils below CA TTLC. Even if solubilized, metals would be below STLO.			
D: Document Search, Field Work F: Field Work (Measuring) G: Geophysical Investigation C: Compliance with Regulations SS: Soil Sampling GS: Groundwater Sampling							
REFERENCES: CH2M-CH2M HIK(1982); SAIC 1-SAIC, 1985; SAIC 2-SAIC, 1987; JMM-MONTGOMERY, 1988.							

Table 3.11-10. INDUSTRIAL/STORM DRAIN DISPOSAL AREA ACTIVITIES

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ID #	SITE NAME/DESCRIPTION	WASTE DESCRIPTION	REF.	CH2M 1982	SAIC 1 1985	SAIC 2 1987	JMM 1988
8-20	Industrial Outfall and Pipeline	At northeast corner of the base. Industrial/stormwater outfall guilty with waste oils, fuels, solvents, paint strippers. STP percolation ponds located here in 1940's.	CH2M-p55	D	SS,GS,F,D	SS,GS,F	SS,F,D,O
YEAR	ACTIVITY DESCRIPTION	REPORTED CHARACTERIZATION RESULTS	REF.	SUMMARY OF FINDINGS			
1984	Field observations	Oil & fuel-stained sediments observed; deeper than 1' in some manholes	SAIC, 1985 p76	Confirmed oil and grease contamination; 2 concentration gradients; N. and S. apron storm drains suspected source of contaminant loading; recommended monitoring of industrial/storm drain and other locations. (p80-6)			
	Well NZ05 (in apron) drilled, sampled. (For NZ01,04, see NE Disposal Area Table.)	In mg/l: oil & grease=1; phenols=ND; TOC=5; Cr=.1 (EPA MCL=.05); Pb=.13 (MCL=.05); pesticides=ND; halogenated hydrocarbons (iodine) =.02.	p54-67,76 esp. 56				
	3 soil samples taken from NZ05	Oil and grease to 140 mg/kg. Cr to 20 mg/kg. ND for pesticides,	p55				
	7 composite soil samples 5 and 10 ft; 1 each from 7 sampling pts (ID01-ID07)	Oil and grease (90-250 mg/kg) and chromium (2-11 mg/kg) in all samples; trace phenol in 3 samples; no pesticide or halogenated hydrocarbons	p59-61,77				
	Exfiltration testing of sewer line	Very high rates of water loss measured in one section	p76				
1986	17 sludge and sediment samples (SD01-SD16,SD20)	BNAs, phthalates, VOCs (to 1.4 mg/kg TCE), heavy metals (lead to 680 mg/kg; soluble lead to 310 mg/kg) present in samples.	SAIC, 1987 p4-109-115	TCE in storm drain black sludges would fail proposed TCLP (.07 mg/kg). Lead in leachate would exceed State and proposed Fed. 5 mg/kg limits. (p4-113,115) Sediments and sludges are contaminated by benzene, ethylbenzene, toluene, trichloroethene, xylenes, lead, zinc above 1 mg/kg. Additional purgeable halocarbons, polycyclic aromatic hydrocarbons, and chromium to less than 1 mg/kg. Sediments will continue to release contaminants until removed. (p4-174,9) Rec'd removal of sediments from storm sewer, removal of sources. (p5-14-15)			
	11-30' soil gas borings (ID01-ID11)	1 boring with organic compounds, incl. (in mg/kg) ethylbenzene (>25), toluene (>9), xylenes (>17). Soils at 20'-25' are the most contaminated. Concentrations of metals within CA TTLC, STLC.	p4-110;115-117				
	3 monitoring wells (NZ14-NZ16); 9 groundwater samples.	TCE (.58 ug/l) below MCL (5 ug/l). Chloroform (.02 ug/l) below Fed. limit (100 ug/l). ND for other VOCs; ND for metals.	p4-78-91				
	9 soil samples from 3 well boreholes.	No VOCs. No BNAs. Acid extractables at low levels. Metals below CA TTLC and STLC.	p4-116				
	Outfall ditch: 15 samples, 7 locations (OD01-OD07); samples at 5 & 10 feet	No VOCs; metals below CA TTLC, STLC; phthalate concentrations below 1 mg/kg.	p4-116-120				

Table 3.11-10. INDUSTRIAL/STORM DRAIN DISPOSAL AREA ACTIVITIES

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1987	5 10" pavement corings (B1-B5); 7 2.5" corings along east storm drain	Concrete thickness: 7-17"; asphalt thickness: 2.5-4.5",	JMM, 1988b p4-5,8	Recommendations for East Storm Drain included testing of soils for Pb; removal of sediments; further investigation of contamination in high and normal flow sections of drain. (p12-13) Recommendations for West Storm Drain included further investigation of the extent of contamination in the vicinity of boring with higher metals concentrations. (p13-14)
	Soil borings made in B1-B5. Boring B5 drilled for background. 15 soil samples taken (10 for chemical analysis; 5 for geotech. analysis).	No TCE detected; extractable concentrations of Cr,Zn,Pb below STLC. 1 sample in excess of Soluble Designated Level to protect groundwater for Pb.	p4;7-9	
	10 sediment samples from east storm drain	4 samples exceed Pb STLC 5.0 mg/l (to 31 mg/l). 1 sample exceeds Zn STLC STCL 250 mg/l (to 530 mg/l). 1 sample with TCE, but below STLC. Pb, Cr exceed Soluble Designated Levels.	p5-6;9-10	
	7 sediment samples from west storm drain	Samples below STLC for metals and TCE. Pb,Cr exceed Soluble Designated Levels.	p5-6;10-11	
	Video survey of west storm drain	Pipe generally in good condition. Break in line noted; thought that liquid may flow out of this crack during high flows.	p7;11-12	
	Land survey of storm drain with transit and rod		p7	
D: Document Search, Field Visit F: Field Work (Measuring)		G: Geophysical Investigation C: Compliance with Regulations	SS: Soil Sampling GS: Groundwater Sampling	
REFERENCES: CH2M-CH2M HWY(1982); SAIG 1-SAIG, 1985; SAIG 2-SAIG, 1987; JMM-MONTGOMERY, 1988, 1988b				

Table 3.11-11. NORTHEAST DISPOSAL AREA ACTIVITIES

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ID #	SITE NAME/DESCRIPTION	WASTE DESCRIPTION	REF.	CH2M	SAIC 1	SAIC 2	JMM
				1982	1985	1987	1988
S-5	Fire Training Area	At existing fire training area. Burnt waste oils and fuels.	CH2M-p51	D		SS,GS	SS,GS,F
S-6	Abandoned Fire Training	South of and possibly to under the STP Percolation ponds. Abandoned fire training area with burnt waste oil and fuel.	CH2M-p51	D	SS,GS,D,F	SS,GS	
S-21	STP Percolation Ponds	DPDO storage yard with oil, asphalt and pelletive spills. South of alert hangar. STP percolation ponds for sanitary wastes. Waste oils and solvents enter sanitary system. Abandoned fire training area may underlie ponds.	CH2M-p56	D		SS,GS	SS,GS
S-24	Sewerage Sludge Disposal	Along industrial discharge gully north of runway. Sewage sludge.	CH2M-p56	D		SS,GS	
S-25	Sludge Drying Beds	Next to STP. Sludge drying beds for sanitary and industrial primary sludges from residential and shop discharges to sewer.	CH2M-p57	D	SS,GS,D,F	SS	
L-11	Street Sweepings	North of the residential area. Street sweepings. Possible trash and rubble 1960's, 1970's. All base waste from 1953 to 1967, like wastes at L-1, with possible burning using waste oil in 1950's.	CH2M-p45	D	SS,GS,D,F	GS,SS	
L-12	Original base Landfill	Under Bldg 761 (alert hangar) and apron. Non-salvageable materials (tools, POL, jeeps, scooters, war supplies after 1946). Incinerated ash from all base trash burning prior to 1950. Miscellaneous dumping and burning until 1950's.	CH2M-p46	D	SS,GS,D,F	GS,SS	
L-13	Base Landfill/Fuel	East of the alert barn. Minimal fuel disposal. All base wastes after L-1 closure in +/- 1970. No burning.	CH2M-p46	D	SS,GS,D,F	GS,SS	
B-6	Pesticide and Paint Burial	East of alert hangar and southeast of B-5. Unverified DDT, Copper sulfate, leaded paint.	CH2M-p46	D	SS,GS,D,F	SS,GS	
B-9	Acid and Oil Burial	North of northeast end of Runway 03. Unverified HCl, H2SO4, oil, fuel and unidentified drum burial.	CH2M-p46	D	SS,GS,D,F	SS,GS	
B-10	Pesticide and Oil Burial	Northeast of northeast end of Runway 03. Unverified pesticides and oil drums.	CH2M-p46	D	SS,GS,D,F	SS,GS	
YEAR	ACTIVITY DESCRIPTION	REPORTED CHARACTERIZATION RESULTS	REF.	SUMMARY OF FINDINGS			
1984	Wells NZ01,02,03,04 drilled, sampled; (NZ01,NZ04 originally classified as being in Industrial/Storm Drain Area); existing well MW-1 sampled.	(For NZ01-NZ04): oil & grease to .6 mg/l; phenols to .03 mg/l (above CA AL of .001); TOC to 27 mg/l; Cr to .32 mg/l (EPA MCL=.05); Pb to .26 mg/l (MCL=.05); halogenated hydrocarbons (iodine) to .032 mg/l. No pesticides. Very low (below .6 mg/l) concentrations of silver.	SAIC, 1985 p54-67,76-77	Confirmed contamination downgradient of NE landfills & fire training area; lead and chromium concentrations in groundwater in excess of EPA standards; other contaminants found. Recommended replication of groundwater sampling results; determination of soluble vs. total heavy metals; confirmation of groundwater flow rates and direction; waste characterization; impacts associated with activities at S-5; hydraulic connection between B-20 and other NE sites. (p. 85-6)			

Table 3.11-11. NORTHEAST DISPOSAL AREA ACTIVITIES

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1988	33 wells constructed in NE Disposal Area. Wells NZ01-NZ41, MW-1 sampled. (NZ14-NZ16 results in Industrial/Storm Drain Table.)	TCE in many wells (to 470 ug/l) in excess of MCL of 5 ug/l. Contam. greatest in Shallow Perched Zone; confirmed in Deep Perched Zone and Upper (Regional) Aquifer at lower concentrations. Chloroform in 90% of wells, but below Federal reg. limit. In 3 wells, benzene (to 3.8 ug/kg), above CA AL of .7 ug/l. Methylene chloride present, but below CA AL. In 4 wells, 1,2-DCA (to 4.62 ug/l) above CA AL; wide-spread at lower concentrations. No BNA's or pesticides detected. Cr, Pb, Ag, Zn only detected in 1 well, and below MCLs.	SAIC, 1987 p3-4-8 p4-78-91 esp. 4-84-9	Groundwater samples from NE area are the most severely contaminated samples collected. Large TCE plume with concentrations above 100 ug/l. TCE contamination of Upper (Regional) Aquifer expected to continue. Plume moving north and northeast. Benzene, 1,2-DCA also exceed regulatory standards. (p4-172-3) Recommended further analysis, elimination of active releases. (p. 6-4)
	S-5: 5 wells (FT01-FT-05) constructed 122-160 feet bgs; 16 grndwtr samples	TCE in all wells (to 55 ug/ml), above MCL of 5 ug/l; chloroform below CA AL and MCL in all samples; other VOCs below reg. limits; ND or low heavy metal concentrations; phthalate ester in 1 sample.	p4-77-8	Groundwater perched aquifer beneath fire training area not acceptable drinking water due to TCE contamination. (p4-78)
	S-5: Soil samples from 8 locations	1 sample 0-2.5 bgs with (mg/kg) ethylbenzene:22; methylene chloride: 46; toluene:50; xylenes:63. Very high concentrations in underflow waters w/in oil/water separator (in parts per million). Cr,Pb,Ag,Zn present below TTLC, STLC.	p4-104-8	High concentrations of purgeable halocarbons and aromatics confirm S-5 facility is active source of pollutant release. (p4-108)
	S-21: 4 soil samples from 2 borings	Cr,Pb,Zn in all samples, below TTLC, STLC. Trace levels of phthalates and polycyclic aromatic hydrocarbons.	p4-124-8	
	S-25: Soil samples from 8 locations	Metals (Cr,Cu,Hl,Pb,Ag,Zn) concentrations below TTLC, STLC. Phthalates to 4.6 mg/kg; naphthalene to .047 mg/kg. (No Fed. or State limits have been set for phthalates or naphthalene.)	p4-118-24	
	Other sites in NE area: Samples from borings NZ06-NZ-13	No VOCs. Low concentrations of 2 phthalates. Cr, Pb, Zn in almost all samples, at concentrations below TTLC, STLC.	p4-131,177	
1987	Soil sampling: S-5: 7 soil samples from 1 boring at Waste Burn Pit	TRPH to 542,000 mg/kg at 10 feet; VOC compounds detected at low concentrations (max: toluene, 22 mg/kg). 2 priority pollutant and 10 non-priority pollutant BNA's found. Metals found in all samples.	JMM, 1988 p4-5,6;5-3; 7-2	Presence of high TRPH concentrations present potential threat. Recommended soil borings to 80' bgs to define contamination, evaluate potential for groundwater contam.(p7-2)
	S-21: 6 soil samples from 2 borings	Low concentrations of metals; 1 VOC and 1 BNA at low concentrations; no pesticides or PCBs; TRPHs to 80 mg/kg.	p4-9,7-3	No further soil investigation needed. (p7-3)
	Groundwater: S-5: Sampling from 3 existing wells in Fire Training Area	TCE to 66 ug/l; TRPH to 1.4 mg/l. Chloroform, PCE each to .2 mg/l. No BNA's. Chloroform to 4.1 ug/l, but may be an artifact.	p4-5,7-2	TCE contam. is part of larger plume for which RAP has been prepared. Recommended limited soil boring/groundwater sampling investigation to define soil contamination. (p7-2)
	S-21: 1 groundwater sample from MW-1	Low concentrations of VOCs (benzene to .2 ug/l); no BNA's, pesticides or PCBs. Low concentrations of metals.	p4-9,10;7-3	No further groundwater investigation needed. (p7-3)
	NE Area: 2 wells (NZ37,NZ40) redeveloped and sampled	TCE to 210 ug/l; cis-1,2-DCE to 1.7 ug/l.	p4-12	TCE concentrations have steadily increased since 1986. (p4-12)

Table 3.11-11. NORTHEAST DISPOSAL AREA ACTIVITIES

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1997 (cont'd)	NE Area: Wells NZ42-NZ50 installed	NZ47 installed to replace NZ 38; NZ50 installed to replace NZ47. No results of analyses of samples reported in JMM 1988 or JMM 1988a.	p2-5-6; JMM 1988a, Appendix B	
D: Document Search, Field Visit G: Geophysical Investigation SS: Soil Sampling F: Field Work (Measuring) C: Compliance with Regulations GS: Groundwater Sampling				
REFERENCES: CH2M-CH2M HILL 1992; SAIC 1-SAIC, 1985; SAIC 2-SAIC, 1987; JMM-MONTGOMERY, 1988, 1988a.				

Table 3: 1-12. ACTIVITIES AT OTHER ON-BASE SITES

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ID #	SITE NAME/DESCRIPTION	WASTE DESCRIPTION	REF.	CH2M 1982	SAIC 1 1985	SAIC 2 1987	JMM 1988
NPSRH	Non Point Source Residential Housing	Central east part of base in housing area. Roadway and surface runoff from area.	SAIC2-p4-128 Fig. 4-39			SS	
LFDS	Liquid Fuel Distribution System	About 25000' of 8", 10" steel pipe from the operational apron south to and terminating at S-14.	SAIC2-p4-153 Fig. 4-48			SS	
YEAR	ACTIVITY DESCRIPTION	REPORTED CHARACTERIZATION RESULTS	REF.	SUMMARY OF FINDINGS			
1986	NPSRH: 6 soil borings, max. depth 5'	BNAs (fluoranthene, a PAH) to 1.1 mg/kg; sum of PAHs = 3.39 mg/kg. No VOCs. Metals below TTLC, STLC.	SAIC, 1987 p4-128-30	No Federal or CA limits have been set for PAHs in soil.			
	LFDS: 11 soil borings to 30'	Zinc below TTCL, STLC. No purgeable halocarbons or purgeable aromatics at quantification concentrations. Trace level, unconfirmed presence of VOCs detected in chromatograms.	p4-153, 156- 157				
D: Document Search, Field Visit F: Field Work (Measuring)		G: Geophysical Investigation C: Compliance with Regulations	SS: Soil Sampling GS: Groundwater Sampling				
REFERENCES: CH2M-CH2M HW(1982); SAIC 1-SAIC, 1985; SAIC 2-SAIC, 1987; JMM-MONTGOMERY, 1988.							

REFERENCES

CH2M - Installation Restoration Program Records Search, January 1982. Prepared by CH2M Hill

SAIC1 - Installation Restoration Program Phase II, Stage 1 - Confirmation/Quantification, August 1985. Prepared by Science Applications International Corporation.

SAIC2 - Installation Restoration Program Phase II, Stage 2 - Confirmation/Quantification, January 1987. Prepared by Science Application International Corporation.

JMM - Installation Restoration Program Remedial Investigation Report, Volume I, August 1988. Prepared by James M. Montgomery Consulting Engineers.

ATTACHMENT D
COMPREHENSIVE WORKPLAN OUTLINE

ATTACHMENT D: RI/FS WORKPLAN OUTLINE

The following outline lists topics to be included, at a minimum, in the RI/FS Workplans for George AFB. The workplan shall also include additional topics and tasks, as appropriate, for example, as set forth in the Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA (OSWER Directive 9355.3-01, Interim Final, October 1988 and as amended) and applicable State Law.

I. ELEMENTS OF A WORKPLAN

INTRODUCTION - A general explanation of the reasons for the RI/FS and the expected results or goals of the RI/FS process are presented.

SITE BACKGROUND AND PHYSICAL SETTING - The current understanding of the physical setting of the site, the site history, and the existing information on the conditions of the site are described.

INITIAL EVALUATION - The conceptual site model developed during scoping is presented, describing the potential migration and exposure pathways and the preliminary assessment of public health and environmental impacts.

WORKPLAN RATIONALE - Data requirements for both the risk assessment and the alternatives evaluation identified during the formulation of the Data Quality Objectives (DQOs) are documented, and the workplan approach is presented to illustrate how the activities will satisfy data needs.

RI/FS TASKS - The tasks to be performed during the RI/FS are presented. If an RI/FS is divided into distinct operable units, each operable unit should be monitored and reported on separately. This description incorporates RI site characterization tasks identified in the Quality Assurance Project Plan (QAPP) and the Field Sampling Plan (FSP), the data evaluation methods identified during scoping and the preliminary determination of tasks to be conducted after site characterization.

II. STANDARD RI/FS WORKPLAN TASKS

Task 1. Project Planning (Project Scoping)

This task includes efforts related to initiating a project. The project planning task is defined as complete when the workplan and supplemental plans are approved (in whole or in part). The following typical elements are include in this task:

- Workplan memorandum
- Kickoff meeting (RI/FS brainstorming meeting)
- Site visit/meeting
- Obtaining easements/permits/site access
- site reconnaissance and limited field investigation
- site survey/topographic map/review of existing aerial photographs
- Collection and evaluation of existing data
- Development of conceptual site model
- Identification of data needs and DQOs
- Identification of preliminary remedial action objectives and potential remedial alternatives
- Identification of treatability studies that may be necessary
- Identification of RCRA/CERCLA Integration requirements
 - Conduct RCRA Facility Assessment (RFA) to identify Solid Waste Management Units (SWMUs) using EPA RFA Guidance.
- Screening of expedited response alternatives
- Preliminary identification of ARARs
- Preparation of plans (e.g., workplan, health and safety plan, QAPP, FSP)
- Initiation of coordination with analytical laboratories (CLP and non-CLP)
- Task management and quality control

Task 2. Response Action Taken

This task identifies removal actions previously taken at this site and analyzes the consistency of those removal actions with remedial action currently under consideration.

Task 3. Community Relations

This task incorporates all efforts related to the preparation and implementation of the community relations plan for the site and is initiated during the scoping process. It includes time expended by both technical and community relations personnel. This task ends when community relations work under Task 13 is completed, but the task does not include work on the responsiveness summary in the ROD (see Task 12). The following are typical elements included in this task:

- Conducting community interviews
- Preparing a community relations plan
- Preparing fact sheets
- Providing public meeting support
- Providing technical support for community relations
- Implementing community relations
- Managing tasks and conducting quality control

Task 4. Field Investigation

This task involves efforts related to fieldwork in conducting the RI. The task begins when any element, as outlined in the workplan, is approved (in whole or in part) and fieldwork is authorized. Field investigation is defined as complete when the contractor and subcontractors are demobilized from the field. The following activities are typically included in this task:

- Procurement of contractors
- Mobilization
- Media Sampling
- Source testing
- Geology/hydrogeological investigations
- RCRA Facility Investigations (RFA)
- Geophysics
- Site survey/topographic mapping (if not performed in project planning task)
- Field screening/analyses
- RI waste disposal
- Task management and quality control

Task 5. Sample Analysis/Validation

This task includes efforts related to the analysis and validation of samples after they leave the field. Separate monitoring of close support laboratories may be required. Any

efforts associated with laboratory procurement are also included in this task. The task ends on the date that data validation is complete. The following typical activities are usually included in this task:

- Sample management
- Non-Contract Laboratory Program (CLP) analysis
- Use of mobile laboratories
- Data validation
- Testing of physical parameters
- Task management and quality control

Task 6. Data Evaluation

This task includes efforts related to the analysis of data once it has been verified that the data are of acceptable accuracy and precision. The task begins on the date that the first set of validated data are received by the project team and ends during preparation of the RI report when it is deemed that no additional data are required. The following are typical activities:

- Data evaluation
- Data reduction and tabulation
- Environmental fate and transport modeling/evaluation
- Task management and quality control

Task 7. Assessment of Risks

This task includes efforts related to conducting the baseline risk assessment. The task will include work to assess the potential human health and environmental risks associated with the site. Work will begin during the RI and is completed once the baseline risk assessment is completed. The following are typical activities:

- Data collection and evaluation
- Exposure assessment
- Toxicity assessment
- Risk characterization
- Task management and quality control

Ecological Assessment

- Determination of need, objectives, and level of effort
- Evaluation of site characteristics

- Contamination evaluation
- Potential for exposure
- Selection of assessment and measurement endpoints
- Sampling and analysis plan

Task 8. Treatability Study/Pilot Testing

As appropriate, this task includes efforts to prepare and conduct pilot, bench, and treatability studies. This task begins with the development of workplans for conducting the tests and is complete once the report has been completed. The following are typical activities:

- Workplan preparation or workplan amendments
- Test facility and equipment procurement
- Vendor and analytical service procurement
- Equipment operation and testing
- Sample analysis and validation
- Evaluation of results
- Report generation
- Task management and quality control

Task 9. Remedial Investigation Reports

This task covers all efforts related to the preparation of the finding once the data have been evaluated under tasks 6 and 7. The task covers all draft and final RI reports as well as task management and quality control. The task ends when the RI document is submitted as final to EPA. The following are typical activities:

- Preparation of a preliminary site characterization summary
- Data presentation (formatting tables, preparing graphics)
- Writing the report
- Reviewing and providing quality control efforts
- Printing and distributing the report
- Holding review meetings
- Revising the report on the basis of agency comments
- Providing task management and control

Task 10. Remedial Alternatives Development/Screening

This task includes efforts to select the alternatives to undergo full evaluation. The task is initiated once sufficient data are available to develop response actions and begin the ini-

tial evaluation of potential technologies. This task is defined as complete when a final set of alternatives is chosen for detailed evaluation. The following are typical activities:

- Identifying/screening potential technologies
- Screening technologies
- Assembling potential alternatives
- Identifying action-specific ARARs
- Evaluating each alternative on the basis of screening criteria (effectiveness, implementability, grossly inappropriate cost)
- Reviewing and providing quality control of work effort
- Holding review meetings
- Refining the list of alternatives to be evaluated

Task 11. Detailed Analysis of Remedial Alternatives

This task applies to the detailed analysis and comparison of alternatives. The evaluation activities includes performing detailed public health, environmental, and institutional analyses. The task begins when the alternatives to undergo detailed analysis have been identified and agreed upon and ends when the analysis is complete. The following are typical activities:

- Evaluate each alternative and compare the relative performance of each alternative according to the following criteria:
 - Overall protection of human health and the environment
 - Compliance with ARARs
 - Long-term effectiveness
 - Reduction of toxicity, mobility and volume
 - Short-term effectiveness
 - Implementability
 - Cost
 - State acceptance, if known
 - Community acceptance, if known
- Review of Quality Control efforts
- Review meetings
- Task management and quality control

Task 12. Feasibility Study (or RI/FS) Reports

Similar to the RI reports task, this task is used to report FS deliverables. However, this task should be used in lieu of the RI reports task to report costs and schedule for combined RI/FS deliverables. The task ends when the FS (or RI/FS) is released to the public. The following are typical activities:

- Presenting data (formatting tables, preparing graphics)
- Writing the report
- Printing and distributing the report
- Holding review meetings
- Revising the report on the basis of agency comments
- Providing task management and quality control

Task 13. Post RI/FS Support

This task includes efforts to prepare the responsiveness summary, support the ROD, conduct any predesign activities, and close out the work assignment. All activities occurring after the release of the FS to the public should be reported under this task. The following are typical activities:

- Preparing the predesign report
- Preparing the conceptual design
- Attending public meetings
- Writing and reviewing the responsiveness summary
- Supporting ROD preparation and briefings
- Reviewing and providing quality control of the work efforts
- Providing task management and quality control

Task 14. ATSDR Coordination

This task is used to report coordination efforts with the Agency for Toxic Substances and Disease Registry (ATSDR). All necessary environmental investigation results, including that of the remedial investigation will be provided to ATSDR so that they will be able to conduct a health assessment for the site.

SECONDARY DOCUMENTS IN SUPPORT OF THE RI/FS

A. Quality Assurance Project Plans

This document will follow the most current EPA guidance for Quality Assurance Project Plans. The following elements should be included:

- Title page
- Table of Contents
- Project Description
- Project Organization and Responsibilities
- QA Objectives for Measurement
- Sampling Procedures
- Sample Custody
- Calibration Procedures
- Analytical Procedures
- Data Reduction, Validation, and Reporting
- Internal Quality Control
- Performance and System Audits
- Preventative Maintenance
- Precision, Accuracy and Completeness
- Corrective Actions

B. Field Sampling Plan

This document will follow the most recent EPA guidance and will address, at a minimum, the following:

Site Background - If the analysis of existing data is not included in the workplan or QAPP, it must be included in the Field Sampling Plan (FSP). This analysis would include a description of the site and surrounding areas and a discussion of known and suspected contamination sources, probable transport pathways, and other information about the site. The analysis should also include descriptions of specific data gaps and ways in which sampling is designed to fill those gaps. Including this discussion in the FSP will help orient the sampling team in the field.

Sampling Objectives - Specific objectives of a sampling effort that describe the intended uses of data should be clearly and succinctly stated.

Sample Location and Frequency - This section of the sampling plan identifies each sample matrix to be collected and the constituents to be analyzed. A table may be used to clearly identify the number of samples to be collected along with the appropriate number of replicates and blanks. A figure should be included to show the location of existing or proposed sample points.

Sample Designation - A sample numbering system should be established for each project. The sample designation should include the sample well number, the sampling round, the sample matrix (e.g., surface soil, ground water, soil boring), and the name of the site.

Sample Equipment and Procedures - Sampling procedures must be clearly written. Step-by-step instruction for each type of sampling are necessary to enable the field team to gather data that will meet the DQOs. A list should include the equipment to be used and the material composition (e.g., Teflon, stainless steel) of the equipment along with decontamination procedures.

Sample Handling and Analysis - A table should be included that identifies sample preservation methods, types of sampling jars, shipping requirements, and holding times. Examples of paperwork and instructions for filling out the paperwork should be included. Specific documentation for the laboratory and field work should be included (e.g., field notebooks, photographs).

Provisions should be made for the proper handling and disposal of wastes generated onsite. The site specific procedures need to be described to prevent contamination of clean areas and to comply with existing regulations.

C. Health and Safety Plan, including Contingency Plan(s)